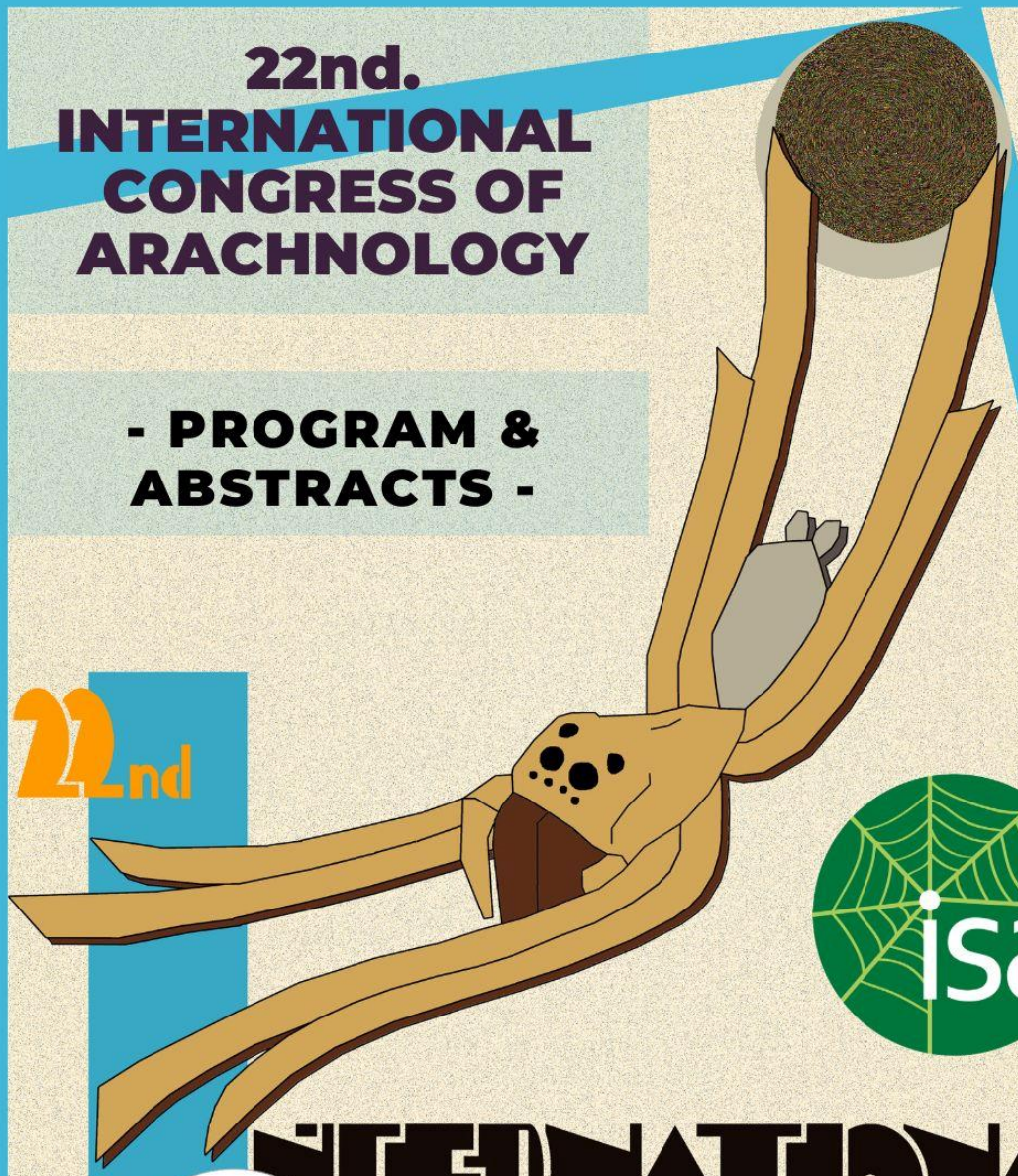
22nd. INTERNATIONAL CONGRESS OF ARACHNOLOGY

- PROGRAM & ABSTRACTS -



22nd

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INTERNATIONAL CONGRESS OF ARACHNOLOGY

URUGUAY 2023

MONTEVIDEO

5-11 MARCH

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The logo

Designed by arachnologists Carlos Perafán and Álvaro Laborda the 22nd International Arachnology Congress logo is inspired in the poster of the First World Soccer Championship, which occurred in Uruguay in 1930. The Uruguayan artist Guillermo Laborde designed the original poster in art-deco style.

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Preface:

Welcome to the 22nd International Arachnology Congress in Uruguay, land of Arachnology

Uruguay is a small and open-minded country located at the South East of South America, between Argentina and Brazil. Our country has a long tradition in Arachnology, reflected by the large number of researchers and students working in various disciplines as taxonomy, systematics, ecology and animal behavior. Our team organized the 'Primer Encuentro de Aracnólogos del Cono Sur' (First Arachnology Meeting of the South Cone) in 1997 and the 'Primer Congreso Latinoamericano de Aracnología (First Latin American Arachnology Congress) in 2005. Arachnology in Latin American has shown a remarkable growth since then and Uruguayan Arachnology has been part of these advancements. Undoubtedly, organizing the 22nd International Congress of Arachnology in Uruguay at times of economic crises, pandemics and war, has been a great challenge. We have reached the milestone and this is possible thanks to the support of the arachnological community and the huge work of all the organizing team. Hope this congress at our home country is a fresh breath of scientific inspiration, enjoyable and memorable as we dreamt it.

Anita Aisenberg
President of the Organization Committee
22nd International Arachnology Congress
Montevideo, Uruguay, 2023

PROGRAM
22nd. International Congress of Arachnology

SUNDAY 5	MONDAY 6		TUESDAY 7		TUESDAY 7		WEDNESDAY 8	THURSDAY 9		FRIDAY 10		SATURDAY 11	
	Blue Room (IM)		Blue Room (IM)		Red Room (IM)			Blue Room (IM)		Blue Room (IM)		Blue Room (IM)	
WORKSHOP 9 a.m. - 1 p.m. 'Recognizing and interrupting unconscious bias in STEM' Coordinaction M. Andrade (Venue: IIBCE)	9 - 10 a.m.	Conference: *The evolution of the orb-weaving spiders: systematist's perspective.* Gustavo Hormiga	9 - 10 a.m.	Conference: *Mining new potential therapeutic drugs in spider venoms.* Ma. Elena De Lima Pérez García			7:30 a.m. TOUR TO MALDONADO	9 - 10 a.m.	Conference: *Genitalic evolution in Opiliones and its importance in the systematic of Laniatores.* Abel Pérez González	9 - 10:30 a.m.	Tribute to Norman I. Platnick. Coordination G. Hormiga & M. J. Ramírez	9 - 9:15 a.m.	Manuel Cajade
	Session Honoring Fernando G. Costa											9:15 - 9:30 a.m.	Gerardo Contreras
	10 - 10:15 a.m.	Paulina Pintos	10 - 10:15 a.m	Benjamin C. Klementz	10 - 10:15 a.m.	Esteban Calvache	10- 11 a.m. Conference: *Control, context, and choosiness: Flipping the lens to see female tactics in widow spiders.* Maydianne Andrade (Venue: MACA)	10 - 10:15 a.m.	Jose K. Sunil			9:30 - 9:45 a.m.	Alejandro Betancourt-Caicedo
	10:15 - 10:30 a.m.	Peter Jäger	10:15 - 10:30 a.m.	Matías A. Izquierdo	10:15 - 10:30 a.m.	Łukasz Trębicki		10:15 - 10:30 a.m.	Sarah L. Boyer			9:45 - 10 a.m.	Glauco Machado
	10:30 - 10:45 a.m.	Mariela Oviedo-Diego	10:30 - 10:45 a.m.	Williams Porto	10:30 - 10:45 a.m.	Mercedes Burns		10:30 - 10:45 a.m.	Dora Hlebec	10:30 - 10:45 a.m.	Katherine O. Montana	Session Honoring Yael Lubin	
	10:45 - 11 a.m.	Laís A. Grossel	10:45 - 11 a.m.	Nicolás Hazzi	10:45 - 11 a.m.	André Lira		10:45 - 11 a.m.	Hugh Steiner	10:45 - 11 a.m.	Cor Vink	10 - 10:15 a.m.	Ingi Agnarsson
	11 - 11:15 a.m.	**coffee break**	11 - 11:15 a.m.	**coffee break**	11:00 - 11:15 a.m.	**coffee break**		11 - 11:15 a.m.	**Coffee break**	11:00 - 11:15 a.m.	**coffee break**	10:15 - 10:30 a.m.	Júlia Andrade de Sá
	11:15 - 11:30 a.m.	Franco Cargnelutti	11:15 - 11:30 a.m.	Daniel N. Proud	11:15 - 11:30 a.m.	Mathew M. Joseph		11:15 - 11:30 a.m.	Sarah Crews	11:15 - 11:30 a.m.	Cielo Disla	10:30 - 10:45 a.m.	Tomás Guerrero
	11:30 - 11:45 a.m.	Wei Zhou	11:30 - 11:45 a.m.	Emily Setton	11:30 - 11:45 a.m.	Marcial A. Galán-Sánchez		11:30 - 11:45 a.m.	Mayara D.F. Magalhães	11:30 - 11:45 a.m.	Ethan Briggs	10:45 - 11 a.m.	
	11:45 - 12 a.m.	Rodrigo Willemart	11:45 - 12 a.m.	Valentin L. Ehrenthal	11:45 - 12 a.m.	Yuri M. Marusik		11:45 - 12 a.m.	Pedro Peñaherrera-R.	11:45 - 12 a.m.	Leonel Martinez	11 - 11:15 a.m.	**Coffee break**
	12 - 12:15 p.m.	Lauren Esposito	12 - 12:15 p.m.	Nancy Lo-Man-Hung	12 - 12:15 p.m.	Nicola J. Sullivan		12 - 12:15 p.m.	Miguel Simó	12 - 12:15 p.m.	Jacob A. Gorneau	11:15 - 11:30 a.m.	Karina Silvestre Bringas
	12:15 - 1:45 p.m.	Lunch time	12:15 - 1:45 p.m.	Lunch time	12:15 - 1:45 p.m.	Lunch time		12:15 - 1:45 p.m.	Lunch time	12:15 - 1:45 p.m.	Lunch time	11:30 - 11:45 a.m.	Arli Ginger Ayala-Apaza
	1:45 - 2:10 p.m.	Young researcher conference: **Leticia Bidegaray-Batista**	1:45 - 2:10 p.m.	Young researcher conference: **Luciana Baruffaldi**				1:45 - 2:10 p.m.	Young researcher conference: **Eva Turk**	1:45 - 2:10 p.m.	conference: **Ľudmila Čer necká**	11:45 - 12 a.m.	Esther Verena Guimaraes Franca
WORKSHOP 2 - 5 p.m. 'Updating the guidelines for arachnological papers in Zootaxa' Coordination C. Muster & P. Jäger (Venue: IIBCE)	2:10 - 2:35 p.m.	Young researcher conference: **Matjaž Gregorič**	2:10 - 2:35 p.m.	Young researcher conference: **Ivan Magalhaes**				2:10 - 2:35 p.m.	Young researcher conference: **Darko Cotoras**	2:10 - 2:35 p.m.	conference: 2 - 2:15 p.m. **Rowan-McGinley**	12 - 12:15 p.m.	Diego F. Cisneros-Heredia
3 - 6 p.m. ACREDITATIONS LOADING OF PRESENTATIONS PLACEMENT OF POSTERS (Venue: IM)	Session Honoring María Elena Galiano							Session Honoring William G. Eberhard				12:15 - 1:45 p.m.	Lunch time
5 - 6 p.m. ISA COUNCIL MEETING (Venue: IM)	2:35 - 2:50 p.m.	Luis C. Hernández Salgado	2:35 - 2:50 p.m.	Nathalia Ximenes	2:35 - 2:50 p.m.			2:35 - 2:50 p.m.	Fedra Bollatti	2:35 - 2:50 p.m.		1:45 - 2 p.m.	Miquel Arnedo
	2:50 - 3:05 p.m.	Wayne P. Maddison	2:50 - 3:05 p.m.	Guilherme F. Pagoti	2:50 - 3:05 p.m.	Sarah Morris		2:50 - 3:05 p.m.	Dante Poy	2:50 - 3:05 p.m.	Gabriel Pompozzi		Rafael F. Indicatti
	3:05 - 3:20 p.m.	Luis Piacentini	3:05 - 3:20 p.m.	Lenka Sentenska	3:05 - 3:20 p.m.	Pedro de S. Castanheira		3:05 - 3:20 p.m.	Diego Solano-Brenes	3:05 - 3:20 p.m.	Min Tan	2:15 - 2:30 p.m.	Nelson Ferretti
	3:20 - 3:35 p.m.	Fernando Álvarez-Padilla	3:20 - 3:35 p.m.	Andrés Taucare-Ríos	3:20 - 3:35 p.m.	Kuang-Ping Yu		3:20 - 3:35 p.m.	Shegufta Rahman	3:20 - 3:35 p.m.	Julien Pétillon	2:30 - 2:45 p.m.	Stephanie F. Loria
	3:35 - 3:50 p.m.	Franklyn Cala-Riquelme	3:35 - 3:50 p.m.	Axel Hacala	3:35 - 3:50 p.m.	Guilherme Gainett		3:35 - 3:50 p.m.	Ryan Bacon	3:35 - 3:50 p.m.	Rocío Palen Pietri	2:45 - 3 p.m.	Diana Silva Dávila
	3:50 - 4:05 p.m.	**cofee break**	3:50 - 4:05 p.m.	**coffee break**	3:50 - 4:05 p.m.	**coffee break**		3:50 - 4:05 p.m.	**coffee break**	3:50 - 4:05 p.m.	**coffee break**	3 - 3:15 p.m.	Erika López
	4:05 - 5:45 p.m.	**Symposium. Solifugae: current knowledge and future directions** Coordination D. Vrech & P. Cushing	4:05 - 5:45 p.m.	**Symposium. Advances in the role of spiders in agroecosystems** Coordination L.F. García & S. Pékar	4:05 - 4:20 p.m. 4:20 - 4:35 p.m. 4:35 - 4: 50 p.m. 4:50 - 5:05 p.m. 5:05 - 5:20 p.m. 5:20 - 5:35 p.m. 5:35 - 5:50 p.m.	Pedro Martins Mark Harvey Rafael Fonseca-Ferreira Charmeine Condy Goran Shikak Martín J. Ramírez Matjaž Kuntner		4:05 - 5:45 p.m.	**Symposium. Subsocial and social spiders** Coordination C. Viera	4:05 - 5:45 p.m.	**ISA GENERAL MEETING**	3:15 - 3:30 p.m.	Dinesh Rao
												3:30 - 3:45 p.m.	
												3:45 - 4:05 p.m.	**coffee break**
6 - 7:30 p.m. OPENING 22ICA (Venue: IM)	5:45 - 6 p.m.		5:45 - 6 p.m.					5:45 - 6 p.m.	GROUP PHOTO			4:05 - 6 p.m.	**22ICA CLOSURE. Presentation of oral and poster awards**
	6 - 7:30 p.m.	**Posters presentations**	6 - 7:30 p.m.	**Posters presentations**	6 - 7:30 p.m.			6 - 7:30 p.m.	**Posters presentations**	5:45 - 7 p.m.	**Premiere of the documentary: Unexpected beauty through the eyes of explorers of the tiny world.**		
	8-10 p.m.	Arachno-Olympic Games (Venue: IAVA)	8:30 p.m.	Beringia Party (Venue: Ábalos brewery)						9 p.m.	**DINNER and costume dancing party** (Venue: Uruguay Club)		

DAILY PROGRAM

Montevideo Time GMT-3
* Student

ORAL PRESENTATIONS will be uploaded **the day before** their presentation, in the Speaker Ready Area (from 8:15 a.m. - 12:15 p.m. and from 4 – 7:30 pm.).

POSTERS PLACEMENT should be done in the morning (from 8:30 a.m.) **on the same day** of their presentation.

DAY 1 (Sunday 5/3)

Assembly Hall - Clemente Estable Biological Research Institute (IIBCE)

(Avenue Italia, 3318)

WORKSHOPS

9 a.m. – 1 p.m. Recognizing and interrupting unconscious bias in STEM
Coordination: Maydianne Andrade

2 – 5 p.m. Updating the guidelines for arachnological papers in Zootaxa
Coordination: Christoph Muster and Peter Jäger
(mixed modality, ZOOM link will be sent to registrants)

Blue Room - Municipality of Montevideo (IM)

(Avenue 18 de julio, 1360)

3 – 6 p.m. ACCREDITATIONS, LOADING OF PRESENTATIONS (for the following day)

5 – 6 p.m. ISA COUNCIL MEETING (*mixed modality, ZOOM link will be sent to registrants*)

6 – 7:30 p.m. OPENING OF 22ICA. Welcome and toast

Day 2 (Monday 6/3)

Blue Room - Municipality of Montevideo (IM)

(Avenue 18 de julio, 1360)

9 – 10 a.m. PLENARY CONFERENCE

The evolution of the orb-weaving spiders: systematist's perspective. ***Gustavo Hormiga***
Introduce: Miguel Simó
(YouTube transmission)

10 a.m. – 12:15 p.m. ORAL PRESENTATIONS – Behavior Module honoring Fernando G. Costa.

Moderators: Luciana Baruffaldi and Carlos A. Toscano-Gadea

10:00 - 10:15. Sin diálogo, ¿hay cópula? El comportamiento sexual de *Pavocosa gallopavo* (Araneae: Lycosidae) con hembras dormidas. **Paulina Pintos***

10:15 - 10:30. "Love bites" in Sparassidae Bertkau 1872 — more usual than thought? **Peter Jäger**

10:30 - 10:45. What is behind the plug: determinants of an inter-sexual mating plug in a scorpion. **Mariela Oviedo-Diego***

10:45 - 11:00. Advertisement predicts male success in acquiring new clutches in a Neotropical arachnid with exclusive paternal care. **Laís A. Grossel***

11 – 11:15 a.m. COFFEE BREAK

11:15 - 11:30. Awaken beauties: mating quiescence in arachnid females. **Franco Cargnelutti**

11:30 - 11:45. Proportional processing of colour patterns in sexual selection of jumping spiders. **Wei Zhou**

11:45- 12:00. Current knowledge on the sensory biology of harvesters (Opiliones). **Rodrigo Willemart**

12:00 - 12:15. A new vision of equity and decolonization in Arachnology. **Lauren Esposito**

12:15 – 1:45 p.m. LUNCH TIME

1:45 – 2:35 p.m. YOUNG RESEARCHER CONFERENCES

Moderator: Miquel Arnedo
(YouTube transmission)

1:45 - 2:10. Where, when, how and why?: phylogeography of two atypical wolf spiders that inhabit the sandy coasts of South America. **Leticia Bidegaray-Batista**

2:10 - 2:35. Bark spiders (Araneidae, *Caerostris*): new insights into the evolutionary and natural histories of an exceptional genus. **Matjaž Gregorič**

2:35 – 3:50 p.m. ORAL PRESENTATIONS – Taxonomy and Phylogenetic Systematic Module honoring Maria Elena Galiano.

Moderators: Martín J. Ramírez and Cristina A. Rheims

2:35 - 2:50. Phylogeny of *Phidippus* (Araneae, Salticidae) using Ultraconserved Elements: re- assessing morphological species groups. **Luis C. Hernández Salgado***

2:50 - 3:05. Clarifying the phylogenetic placement of the Eupoinae (Araneae: Salticidae) with a novel UCE probe set. **Wayne P. Maddison**

3:05 - 3:20. Understanding the wolf sex: morphology and evolution of genital organs in wolf spiders. **Luis Piacentini**

3:20 - 3:35. Describing spider species for tropical regions in reasonable times using diversity inventories (Araneae: Araneomorphae). **Fernando Álvarez-Padilla**

3:35 - 3:50. Understanding the configuration of the cheliceral teeth across marronoid spiders using different morphological character coding strategies. **Franklyn Cala-Riquelme**

3:50 – 4:05 p.m. COFFEE BREAK

4:05 – 5:45 p.m. SYMPOSIUM – Solifugae: current knowledge and future directions

Coordination: David Vrech and Paula Cushing

PANELISTS

Does Haplocnemata hold water? Phylogenomic placement of Solifugae in the chelicerate tree of life. **Prashant Sharma**

Sexual selection in the blink of an eye: mating strategies and reproductive characteristics in solifuges (Arachnida, Solifugae). **David Vrech**

North American camel spiders (Arachnida, Solifugae, Eremobatidae): systemic revision and biogeography of an understudied taxon (Arachnida, Solifugae). **Paula Cushing**

Camel spider trait evolution demonstrates repeated patterns of convergence of historically delimiting characters (Arachnida: Solifugae: Eremobatidae). **Erika Garcia**

Integrative taxonomic approaches in resolving the polyphyly of *Eremobates* camel spiders (Solifugae: Eremobatidae). **Ryan R. Jones**

6 – 7:30 p.m. POSTERS PRESENTATIONS

BEM001- Breaking unconscious gender biases: lessons from 23 years of Latin Arachnology Congresses. **Nancy Lo-Man-Hung***

TSB002- Sudanese spiders (Araneae) in the National Museum in Prague (Czech Republic). **Petr Dolejš**

BEM003- Protein composition of minor ampullate silk makes its properties different from those of major ampullate silk in Araneidae spiders. **Hiroyuki Nakamura***

BEM004- Salinity effect on activity in a native wolf spider: *Allocosa senex.* **Luciano Brandolino***

TSB005- Total evidence phylogeny and taxonomic revision of *Tibelloides* Mello-Leitao, 1939 (Araneae, Philodromidae). **André W. Prado***

BEM006- On the individual role of fluorescence and ultraviolet reflection on prey attraction by orb-web spiders. **Yuri Fanchini Messas**

TSB007- Two new species of *Sarinda* Peckham & Peckham, 1892 with an update on Sarindini diversity in Uruguay (Araneae: Salticidae). **Damián Hagopián***

TSB008- Molecular data reveal cryptic species within the most common tarantula spider from Argentina, *Catumiri argentinense* (Araneae: Theraphosidae). **Nelson Ferretti**

TSB009- Resolving the Textbook scorpion: phylogenetics of the Scorpion genus *Paruroctonus* Werner, 1934. **Felix Duley***

BEM010- Preferring the new one: recognition of previous mates in a spider. **Alfredo V. Peretti**

BEM011- Staying alive: how harvestmen avoid predation. **Nathalia Ximenes***

BEM012- Associations of spiders *Alpaida quadrilorata* (Araneidae) and *Arachosia proseni* (Anyphaenidae) with rosette-shaped plants: a geographic approach. **João Vasconcellos-Neto**

BEM013- Comportamiento alomaternal en *Anelosimus vierae* (Araneae, Theridiidae). **Maria de Fátima da Rocha Dias**

BEM014- A review of the homemade methods for scorpion control. **Gabriel P. Murayama***

BEM015- Does a low residual concentration of the pyrethroid Bifenthrin affect courtship and mating behavior in *Argiope trifasciata*? **Matthias Foellmer**

BEM016- Spiders fed by protein rich, and lipid rich diets did not differ in dispersal tendencies, light helped them to find appropriate spots for ballooning. **Nela Gloríková***

BEM017- Salinity and temperature effects on body size and physiology of a sand-dwelling spider, *Allocosa senex* (Araneae: Lycosidae). **Lucía Rabinovich***

BEM018- Postembryonic ontogenetic change in prey selection by *Chrysso compressa* (Theridiidae) in a Brazilian rainforest. **Brenda Kelly Souza-Santiago***

BEM019- Slower than rocks: evolutionary movement of low-dispersal spiders across the Western Nearctic. **Erik Ciaccio***

TSB020- New specimens and comments on the Crato formation araneofauna, Lower Cretaceous of Brazil. **Elis Maria Gomes Santana***

TSB021- Revisão taxonômica do Gênero *Tetragnatha* (Arachnida: Araneae: Tetragnathidae) no Brasil e Argentina. **Pedro de S. Castanheira**

TSB022- The complete mitochondrial genome of *Erigone atra* Blackwell, 1833 (Araneae, Linyphiidae). **L. Brian Patrick**

BEM023- Food provisioning to *Pardosa* spiders decreases levels of tissue-resident endosymbiotic bacteria. **Milan Řezáč**

BEM024- Diversity of the Genus *Pardosa* (Araneae, Lycosidae) in European Russia. **Yuri M. Marusik**

TSB025- Molecular phylogeny of *Euagrus* funnel-web spiders (Mygalomorphae: Euagridae). **Arnau Calatayud Mascarell***

BEM026- *Megaraneus*: A new case of extreme sexual size dimorphism in araneid spiders. **Klemen Čandek**

BEM027- Composición de la comunidad de arañas presentes en cultivos ecológicos de naranja de Copacabana, Colombia. **Marco A. Benamú Pino**

BEM028- Ecotoxicological effects of Glyphosate herbicidae on web spiders. **Marco A. Benamú Pino**

BEM029- Community of spiders in bell pepper crop (*Capsicum annuum*) in greenhouses, with conventional systems and in agroecological transition. **Marco A. Benamú Pino**

BEM030- Identification of spider fauna through its genitalia in Sheringal kp Pakistan. **Numan Khan**

BEM031- Diversidad de la familia Araneidae en áreas conservadas e intervenidas del Noroccidente de Ecuador. **Mariela Domínguez-Trujillo***

BEM032- Limitations of sperm transfer in spiders - coevolution of morphology and behaviour. **Dharmarathne Chathuranga***

BEM033- Seasonal male dimorphism dynamics of *Phalangium opilio* (Opiliones: Phalangiidae). **Fuga Matsui***

TSB034- Using ultraconserved elements to delimit cryptic species in the New Zealand harvester *Aoraki denticulata* (Arachnida, Opiliones, Cyphophthalmi). **Haley L. A Heine***

TSB035- Phylogenetic analysis and reclassification of spider families Cyrtaucheniidae and Rhytidicolidae (Araneae, Mygalomorphae) using genomic scale data. **Rafael P. Indicatti**

BEM036- Effect of species composition and stand age on spider (Araneae) and harvestmen (Opiliones) communities in Scottish managed plantations. **Andrada Denisa Opris***

TSB037- Redelimitation of the genus *Idiops* Perty, 1833 (Idiopidae) and transfer of five species to the genus *Segregara* Tucker, 1917. **Rafael Fonseca-Ferreira***

BEM038- Scorpions that don't break the rules? Hypoallometry for genital traits and hyperallometry for dimorphic sexual traits. **Julieta Jazmín Giménez Carbonari***

BEM039- Patrones ambientales que inciden en la distribución de los gremios de arañas en plantaciones de *Eucalyptus dunnii*. **María Belén Maldonado**

BEM040- Exploring the morphological and functional consequences of the orthognath-to-labidognath cheliceral transition in spiders. **Megan Ma***

8 – 10 p.m. ARACHNO-OLYMPIC GAMES. In the Sport fields of the Instituto Alfredo Vázquez Acevedo (IAVA) (José Enrique Rodó 1875).

DAY 3 (TUESDAY 7/3)

Blue Room - Municipality of Montevideo

(Avenue 18 de julio, 1360)

9 – 10 a.m. PLENARY CONFERENCE

Mining new potential therapeutic drugs in spider venoms. ***Ma. Elena De Lima Pérez García***
Introduce: Carmen Viera
(YouTube transmission)

10 a.m. – 12:15 p.m. ORAL PRESENTATIONS- Taxonomy Module.

Moderators: Hannah M. Wood and Abel Pérez-González

10:00 - 10:15. Mistaken synapomorphy: the evolutionary developmental origins of the patella. **Benjamin C. Klementz***

10:15 - 10:30. 3D reconstruction reveals a long copulatory organ and long sperm storage organ in a pholcid spider with one palp insertion. **Matías A. Izquierdo**

10:30 - 10:45. Evolutionary history and systematic review of the Andean-Patagonian Triaenonychids (Opiliones: Laniatores: Triaenonychidae). **Williams Porto***

10:45 - 11:00. Chasing the wanderer: phylogenomics reveals incomplete convergent morphological evolution associated to habitat shifts in tropical wandering spiders (Araneae, Ctenidae). **Nicolás Hazzi***

11:00 – 11:15 a.m. COFFEE BREAK

11:15 - 11:30. The tale of three cousins: systematic revisions of the Laniatorean genus *Paraconomma* Roewer, 1915. **Daniel N. Proud**

11:30 - 11:45. A novel Iroquois copy is required for patterning the boundary between prosoma and opisthosoma in the spider *Parasteatoda tepidariorum*. **Emily Setton***

11:45- 12:00. Comparative analysis of the scorpion brain using micro-ct. **Valentin L. Ehrenthal***

12:00 - 12:15. Gene expression in regenerating spinnerets of *Grammostola actaeon* (Pocock, 1903) (Araneae: Theraphosidae). **Nancy Lo-Man-Hung***

12:15 – 1:45 p.m. LUNCH TIME

1:45 – 2:35 p.m. YOUNG RESEARCHER CONFERENCES

Moderator: Anita Aisenberg
(YouTube transmission)

1:45 - 2:10. Is species discrimination under female or male control? An experimental approach using widow spiders. **Luciana Baruffaldi**

2:10 - 2:35. Testing multiple hypotheses about the history of Neotropical rainforests with a complete phylogeny of spiny orb-weavers (*Micrathena*). **Ivan Magalhaes**

2:35 – 3:50 p.m. ORAL PRESENTATIONS – Behavior and Ecology Module.

Moderators: Fedra Bollatti and Mariángeles Lacava

2:35 - 2:50. Are chemical defenses and coloration correlated in Gonyleptidae? **Nathalia Ximenes***

2:50 - 3:05. Dangerous attraction: risks and benefits of pheromone-induced behavioral state changes. **Guilherme F. Pagoti***

3:05 - 3:20. The mechanism and function of self-sacrifice in the brown spider. **Lenka Sentenska**

3:20 - 3:35. Evaluating thermal niche of a predator–prey system: do spiders have similar preferred temperatures than their prey? **Andrés Taucare-Ríos**

3:35 - 3:50. Small and large spatial scale drivers of spider diversities in sub-arctic peat bogs. **Axel Hacala***

3:50 – 4:05 p.m. COFFEE BREAK

4:05 – 5:45 p.m. SYMPOSIUM – Advances in the role of spiders in agroecosystems

Coordination: Luis Fernando García and Stano Pekar

PANELISTS

Trophic interactions in agroecosystems: implications for biological control. **James Hardwood**

Variations in life history traits of lycosid spiders in agro-systems. **Julien Pétillon**

Spiders as study models in agroecosystems: cases from Uruguay. **Luis Fernando García**

Winter-active spiders can control insect pests. **Stano Pekár**

Red Room - Municipality of Montevideo

(Avenue 18 de julio, 1360)

10 a.m. – 12:15 p.m. ORAL PRESENTATIONS – Ecology Module.

Moderators: Glauco Machado and Macarena González

10:00 - 10:15. Habitat use among tropical rainforest solitary and group living spiders with different web architectures (Jatun Sacha, Napo, Ecuador). **Esteban Calvache***

10:15 - 10:30. To discover the undiscovered – the diversity of jumping spider fauna from the Philippines Archipelago – preliminary results. **Łukasz Trębicki**

10:30 - 10:45. Method for identification of *O*-glycosylation in arachnid prey capture proteins. **Mercedes Burns**

10:45 - 11:00. Effects of landscape structure in arachnids' assemblages of four different Brazilian biomes. **André Lira**

11:00 – 11:15 a.m. COFFEE BREAK

11:15 - 11:30. Spider fauna of the Tropical Montane Cloud Forests (TMCFs) of the Western Ghats Biodiversity Hotspot in India. **Mathew M. Joseph**

11:30 - 11:45. From faunistics to systematics: diversity of Linyphiid spiders in temperate and tropical forest of Mexico (Araneae: Araneoidea). **Marcial A. Galán-Sánchez***

11:45- 12:00. Striking diversity and startling ranges of spiders (Araneae) found in tundra zone in Northeastern Siberia. **Yuri M. Marusik**

12:00 - 12:15. Spider biodiversity in New Zealand horticultural ecosystems. **Nicola J. Sullivan***

12:15 – 1:45 p.m. LUNCH TIME

2:50 – 3:50 p.m. ORAL PRESENTATIONS – Systematic and Taxonomy Module.

Moderators: Mercedes Burns and Matjaž Kuntner

2:50 - 3:05. Phylogeny and evolution of foraging behavior in nursery web spiders (Araneae, Pisauridae). **Sarah Morris***

3:05 - 3:20. Taxonomy and systematics of the 'backobourkiine' spiders, a new Australian subfamily of orb-weavers (Araneae, Araneidae). **Pedro de S. Castanheira**

3:20 - 3:35. Raft spiders of Madagascar: Integrative taxonomy of *Dolomedes*. **Kuang-Ping Yu***

3:35- 3:50. Expression and function of retinal determination network homologs in the harvestman *Phalangium opilio*. **Guilherme Gainett***

3:50 – 4:05 p.m. COFFEE BREAK

4:05 – 5:50 p.m. ORAL PRESENTATIONS – Systematic and Taxonomy Module.

Moderators: Lauren Esposito and Mark Harvey

4:05 - 4:20. A spiny problem: iterative taxonomic review and species delimitation in the *Micrathena triangularispinosa* species group (Araneae: Araneidae). **Pedro Martins***

4:20 - 4:35. The pseudoscorpion family Hyidae – new phylogenetic data and a remarkable subterranean radiation in the Australian desert. **Mark Harvey**

4:35 - 4:50. Phylogenomics analysis of *Idiops* Perty, 1833 and Idiopinae Simon, 1889, based in ultraconserved elements (UCE): first results. **Rafael Fonseca-Ferreira***

4:50 - 5:05. Testing for sex-differences and considering the phylogenetic context for opsin expression patterns in widow spiders. **Charmeine Condy***

5:05 - 5:20. Species delimitation of Chihuahuan and great plains *Eremobates palpisetulosus* species group through an integrative taxonomic approach. **Goran Shikak***

5:20 - 5:35. Differences in the fine-structure of cribellar thread attachments indicate divergent construction behavior and biomechanical function. **Martín J. Ramírez**

5:35 - 5:50. Frontiers in Arachnid Science: seven grand challenges in our field. **Matjaž Kuntner**

6 – 7:30 p.m. POSTERS PRESENTATIONS

BEM041- Efecto de la aplicación de caldosulfocalcico (csc) sobre el ácaro del género B*revipalpus.* **Melany Gutierrez**

BEM042- Dispersión, distribución y estructuración genética en A*glaoctenus lagotis*: una araña lobo de tela prioritaria para la conservación en Uruguay. **Nadia Kacevas***

TSB043- Hidden in the caves: new troglobitic species of *Spaeleoleptes* and the type species redescription (Opiliones: Laniatores: Escadabiidae). **Maria Paula Pereira***

BEM044- Population ecology of *Chrysso compressa* (Keyserling, 1884), a theridiid spider with extended maternal care. **Brenda Kelly Souza-Santiago***

BEM045- Teleportation in huntsman spiders: comparative running speeds in 28 sparassid species. **Linda S. Rayor**

BEM046- Models and reality of the distribution of two tarantulas after two decades: *Eupalaestrus weijenberghi* and *Acanthoscurria cordubensis* in Uruguay. **David Ortíz-Villatoro***

BEM047- Effects of insecticides on the mobility and activity rhythms of *Hogna* cf. *bivitatta* from soybean crops. **Mariángeles Lacava**

BEM048- Poliginandria en el opilión *Pachyloides thorelii* (Laniatores, Gonyleptidae). **Estefanía Stanley***

BEM049- The arachnid tank: defensive behavior in the ricinuleid *Cryptocellus narino.* **Luis Fernando García**

BEM050- Experimental evidence that the pesticide bifentol cal kill or be ineffective against the yellow scorpion *Tityus serrulatus*. **Gabriel P. Murayama***

TSB051- Revisao sistemática e análise filogenética de *Linothele* Karsch, 1879, con enfase nas especies do Brasil (Araneae, Mygalomorphae, Dipluridae). **Gabriel Moreira Wermelinger***

TSB052- Nove espécies novas do gênero *Epicratinus* Jocqué & Baert (Araneae: Zodariidae). **Ricardo Antonio Gonçalves***

BEM053- First register of *Pseudogaurax tridens* (Diptera: Chloropidae) associated to eggs sac of *Argiope argentata* (Araneae: Araneidae) in northeastern Brazil. **Lílian A. Santiago***

TSB054- Taxonomic notes on African (Mozambique & Madagascar) Biantidae (Opiliones, Laniatores). **Vanesa Mamani***

BEM055- Does temperature affect the feeding behavior of *Mecicobothrium thorelli* (Araneae, Mecicobothriidae)? **Justina Panchuk***

BEM056- Seleção de habitat em escala fina em três espécies de aranhas associadas a troncos de árvores: uma aproximação experimental. **German Villanueva***

TSB057- Unveiling the Neotropical Philodromidae: two new genera of running crab spiders from South America. **Hector B.P. Schinelli***

BEM058- Nitrogen addition changes the abundance of foliage spiders in Patagonian woodlands. **Gabriel Pompozzi**

BEM059- Behavioural manipulation of the spider *Leucauge argyra* (Tetragnathidae) induced by the Darwin wasp *Hymenoepimecis pinheirensis* (Ichneumonidae). **Anna Luiza Oliveira Martins***

TSB060- Five new species of Zalmoxidae (Opiliones: Laniatores: Zalmoxoidea) from Peru, a morphology approach. **Arli Ginger Ayala-Apaza***

TSB061- A new species of *Pinelema* Wang & Li, 2012, a relictual troglomorphic telemid inhabiting caves in Brazil (Araneae, Telemidae). **Antonio Brescovit**

TSB062- A new genus of Heteropodinae spiders from northern South America (Araneae: Sparassidae). **Cristina A. Rheims**

BEM063- Toxicity of Methoxyfenozide on the orb-web spider *Alpaida veniliae* (Araneae, Araneidae): cytotoxicity in ovaries. **Marco A. Benamú Pino**

BEM064- Ecotoxicological effects on spiders of three pesticides used in greenhouses of bell peper crop (C*apsicum annuum*). **Marco A. Benamú Pino**

BEM065- Effects of a broad-spectrum insecticide on the nanostructure and mechanical properties of *Parawixia audax* (Araneae, Araneidae) spider silk. **Marco A. Benamú Pino**

BEM066- Effect of pesticides on the development of oocytes and sac eggs of *Alpaida veniliae* (Araneae, Araneidae). **Marco A. Benamú Pino**

TSB067- An Opiliones-specific ultraconserved element probe set with a near-complete family-level phylogeny. **Shahan Derkarabetian**

TSB068- The hox logic of the chelicerate prosoma in the daddy longlegs *Phalangium opilio*. **Guilherme Gainett***

TSB069- The Fauna Portal Web Identification Platform: a concept for the rapid documentation of undescribed species. **Pedro de S. Castanheira**

TSB070- The newest and the oldest in the same jar: redescription of *Ceratomontia capensis* and description of a new species of *Ceratomontia* for South Africa (Opiliones: Laniatores: Triaenonychidae). **Williams Porto***

BEM071- An arachnid's guide to being an ant: morphological and behavioral mimicry in ant-mimicking spiders. **Divya Uma**

BEM072- Assessing arachnid diversity in Eurasia during the Eocene. **Stephanie F. Loria**

TSB073- Description of mymecophylous pseudoscorpion *Sphenochernes bruchi* (Mello-Leitão, 1925). **Andrés O. Porta**

TSB074- Spider inventory of the riparian forest of Río Negro, Uruguay reveals biogeographical implications of species distribution. **Damián Hagopián***

TSB075- Which is the real *Plesiopelma longisternale*? Revision of types, molecular phylogeny and morphology. **Nelson Ferretti**

BEM076- Unexpected diversity: the Mygalomorph spider community from a natural reserve representative of the dry Chaco region in Argentina. **Nelson Ferretti**

BEM077- Aversive conditioning and memory in the harvester *Mischonyx cuspidatus* (Arachnida: Opiliones). **Guilherme F. Pagoti***

BEM078- Selección y evaluación de una araña como potencial controlador biológico en cultivos ecológicos de naranja en Copacabana. **Carmen Viera**

8:30 p.m. BERINGIA PARTY. Brewery Ábalos (Ábalos 3196).

DAY 4 (Wednesday 8/3)

7:30 a.m. TOUR TO MALDONADO (expected return time 6:00 p.m.)

Museo de Arte Contemporáneo Atchugarry (MACA)

(Route 104, km 4.5, Manantiales)

10 – 11 a.m. PLENARY CONFERENCE

Control, context, and choosiness: Flipping the lens to see female tactics in widow spiders.
Maydianne Andrade
Introduce: Luciana Baruffaldi
(YouTube transmission)

DAY 5 (Thursday 9/3)

Blue Room - Municipality of Montevideo

(Avenue 18 de julio, 1360)

9 – 10 a.m. PLENARY CONFERENCE

Genitalic evolution in Opiliones and its importance in the systematic of Laniatores. ***Abel Pérez González***

Introduce: Carlos A. Toscano-Gadea

(YouTube transmission)

10 a.m. – 12:15 p.m. ORAL PRESENTATIONS – Diversity and Biogeography Module.

Moderators: Miquel Arnedo and Cristina A. Rheims

10:00 - 10:15. Endemic Mygalomorph spiders of Western Ghats, India. **Jose K. Sunil***

10:15 - 10:30. Diversity and biogeography of New Zealand´s Cyphophthalmi. **Sarah L. Boyer**

10:30 - 10:45. Karstification as a major trigger for diversification in pseudoescorpions in Dinaric Karst. **Dora Hlebec***

10:45 - 11:00. All things conserved: employing ultraconserved elements and machine learning for species delimitation and conservation. **Hugh Steiner***

11:00 – 11:15 a.m. COFFEE BREAK

11:15 - 11:30. Biogeography of *Karaops* (Araneae: Selenopidae) flattie spiders in Australia. **Sarah Crews**

11:30 - 11:45. Systematics and biogeography of *Paravulsor* (Xenoctenidae): an endemic genus from the Brazilian Atlantic forest. **Mayara D.F. Magalhães***

11:45 - 12:00. Eight-legged jewels in the haze: an approach to tarantula (Araneae: Tbillheraphosidae) diversity and biogeography in the Jubones basin, Southwestern Ecuador. **Pedro Peñaherrera-R.***

12:00 - 12:15. A new biogeographic modeling approach on the Southernmost limits of the Atlantic Forest biome using spiders. **Miguel Simó**

12:15 – 1:45 p.m. LUNCH TIME

1:45 – 2:35 p.m. YOUNG RESEARCHER CONFERENCES
Moderator: Hannah M. Wood
(YouTube transmission)

1:45 - 2:10. Phylogeography of two Asian golden orbwaevers. **Eva Turk**

2:10 - 2:35. Insights about diversification processes from spiders of the Pacific. **Darko Cotoras**

2:35 – 3:50 p.m. ORAL PRESENTATIONS – Behavior Module honoring William G. Eberhard
Moderators: Anita Aisenberg and Alfredo Peretti

2:35- 2:50. Determinants of sperm allocation in males of *Allocosa senex* (Lycosidae), a species with high reproductive investment. **Fedra Bollatti**

2:50 - 3:05. Copulatory mechanics in *Josa* (Anyphaenidae) — unveiling the function of femoral apophyses in spiders that lost the RTA. **Dante Poy***

3:05 - 3:20. Sneaker males mimic females and deceive territorial males in a harvestman with alternative reproductive tactics. **Diego Solano-Brenes***

3:20 - 3:35. Vibratory signalling patterns in male *Steatoda nobilis* during courtship displays. **Shegufta Rahman***

3:35 - 3:50. Sexual conflict and differential breeding season length. **Ryan Bacon***

3:50 – 4:05 p.m. COFFEE BREAK

4:05 – 5:45 p.m. SYMPOSIUM– Subsocial and social spiders
Coordination: Carmen Viera

PANELISTS
Taking care of the enemy: a subsocial spider with extended maternal care bodyguarding cocoons of Darwin wasps. **Yuri F. Messas**

Exploring the social brain hypothesis in spiders. **Vanessa Penna-Goncalves**

Adaptive significance of differences in behavioral and life-history patterns between prolonged-subsocial and solitary huntsman spider species. **Linda Susan Rayor**

Aliens on the web: distribution and abundance of commensals (*Philoponella feroka*, Uloboridae) on social spider webs (*Stegodyphus sarasinorum*, Eresidae). **Divya Uma**

Rainy sites harbor bigger insects and predict the occurrence of social spiders. **Jenifer Guevara**

5:45 – 6 p.m. GROUP PHOTO

6 – 7:30 p.m. POSTERS PRESENTATIONS

BEM079- "Slow science" renaissance: understanding the ecology, natural history and demography of a highly endemic Mygalomorph spider from Argentina. **Nelson Ferretti**

TSB080- Phylogenetic revision of the Opiliones family Neopilionidae with an UCE phylogeny. **Pietro Tardelli Canedo***

BEM081- Effect of legs removal on the web architecture of *Neoscona theisi*. **Muhammad Khalid Mukhtar**

BEM082- Taking care of the enemy: egg predation by the Darwin wasp *Tromatobia* (Ichneumonidae) on the cobweb spider *Chrysso compressa* (Theridiidae). **Brenda Kelly Souza-Santiago***

TSB083- Systematic review of *Pseudopilanus* (Pseudoscorpiones: Chernetidae). **Marilia Pessoa-Silva***

TSB084- An approach to Amazonian curtain-web spiders' knowledge: description of new species *Linothele* Karsch, 1879 (Mygalomorphae: Dipluridae) from the upper Amazonia. **Ariel Guerrero-Campoverde***

BEM085- Tourism facilitates extra-range dispersion of non-native araneid spiders in the Galápagos Islands, Ecuador. **Daniel Die***

BEM086- Natural history and behavior of immature stages of *Eruga unilabiana* (Hymenoptera: Ichneumonidae) parasitoid of *Sphecozone* sp. and *Eurymorion* sp. (Linyphiidae). **Luis Campili Pereira***

BEM087- How many jumping spider species are there in Brazil? **Alexandre S. Michelotto***

BEM088- Efeito da urbanização sobre o padrão de diversidade e a condição corporal de escorpiões da Mata Atlântica. **Matheus Feitosa***

BEM089- Libro ilustrado para la enseñanza de arácnidos y náhualt en niños de preescolar en la Sierra Norte de Puebla, México. **Hilda Gabriela Sánchez**

TSB090- Nuevo registro de *Lustrochernes grossus* (Arachnida: Pseudoescorpiones) en Zacapoaxtla, Puebla, México. **Arnoben Martinez***

BEM091- El salto del lobo: dimorfismo y comportamiento sexual en *Paratrochosina amica* (Mello-Leitão, 1941), una Allocosinae de pastizales sudamericanos. **Verónica Gonnet***

TSB092- Hidden by morphology: an unexpected new Mygalomorph spider genus for meridional South America (Araneae, Pycnothelidae). **Rafael P. Indicatti**

BEM093- Affirmative actions to promote and support underrepresented groups in scientific events. **Nancy Lo-Man-Hung***

BEM094- Sexual behavior in subsocial species of *Anelosimus*. **Carmen Viera**

TSB095- Revisão taxonômica do gênero *Tullgrenella* mello-leitão, 1941 (Araneae: Salticidae: Freyina). **Kimberly da Silva Marta***

BEM096- Wingless flight: an update on ballooning in spiders and the erratical use of terms. **Carolina Guerra***

BEM097- Identification of spider fauna through its genitalia in union council Doag dara, Tehsil Sheringal, Dir Upper Khyber Pakhtunkhwa Pakistan. **Ikram Ullah**

BEM098- *Dysdera parthenogenetica* sp. nov. (Araneae: Dysderidae), an unique case of parthenogenesis in spiders. **Milan Řezáč**

BEM099- Developmental instability of spermatophore production in scorpions. **Mariela Oviedo-Diego***

BEM100- ¿Quién se parece a quién? Comportamiento sexual de la araña lobo "mixta" *Diapontia uruguayensis*. **Macarena González**

BEM101- Predatory behavior in the spider *Pikelinia* sp. (Araneae: Filistatidae). **Luis Fernando García**

BEM102- Spider communities of natural grasslands change across different ecoregions of Uruguay. **Gabriel Pompozzi**

TSB103- On the Neotropical spider genus *Otoniela* Brescovit, 1997 (Araneae: Anyphaenidae, Anyphaeninae), with the description of six new species. **Antonio Brescovit**

BEM104- A temporal approach to a spider-wasp interaction in an anthropized area of southeastern Brazil. **Anna Luiza Oliveira Martins***

BEM105- Phenology and spatial distribution of *Latrodectus corallinus* in a high Andean area of Peru. **Marco A. Benamú Pino**

BEM106- Host range and sex determination of spider ectoparasitoid, *Minagenia* sp. (Hymenoptera, Pompilidae). **Marco A. Benamú Pino**

BEM107- Ability of *Bothriurus bonariensis* (Scorpions: Bothriuridae) to detect chemical signals of insecticide in substrate. **Marco A. Benamú Pino**

TSB108- A new genus of huntsman spiders from the Brazilian Amazonia (Araneae: Sparassidae). **Cristina A. Rheims**

TSB109- The diversity of the genus *Procaeculus* (Acari: Caeculidae) in Burmese amber: description of two new species with contributions to the internal classification of the genus. **Andrés O. Porta**

TSB110- The use of morphometric analysis to delimit two Brazilian tarantulas and news about their biogeographic distribution. **Rafael Fonseca-Ferreira***

TSB111- Resolving phylogeny and generic limits of plexippine jumping spiders using UCE data. **Kiran Marathe***

DAY 6 (Friday 10/3)

Blue Room - Municipality of Montevideo

(Avenue 18 de julio, 1360)

9 – 10:30 a.m. TRIBUTE TO NORMAN I. PLATNICK

Coordination: Gustavo Hormiga and Martín J. Ramírez

PANELISTS

Introduction. **Gustavo Hormiga and Martín J. Ramírez**

Norman´s amazing mind: his contributions and cataloguing exploits. **Mark Harvey**

Twenty years of Neotropical Sparassidae: where are we now? **Cristina A. Rheims**

Total evidence analysis with fossils as terminal tips: Burma Terrane shows gondwanan affinities and transported linages to the Northern hemisphere. **Hannah M. Wood**

Colección Nacional de Arácnidos (CNAN) IBUNAM, arachnids, faunistics, and museomics. **Edmundo González-Santillán**

Phylogenomic analyses of the enigmatic order Ricinulei. **Shahan Derkarabetian**

10:30 a.m. – 12:15 p.m. ORAL PRESENTATION – Systematic Module.

Moderators: Sarah Boyer and Cor Vink

10:30 - 10:45. Webs of intrigue: museum genomics elucidate relationships of the marronoid clade (Araneae). **Jacob A. Gorneau***

10:45 - 11:00. An attempt to reunite the pacific bounty hunter, *Pacificana cockayni* Hogg, 1904, with its family. **Cor Vink**

11:00 – 11:15 a.m. COFFEE BREAK

11:15 - 11:30. Systematic revisions of Cosmetid harvestmen (Opiliones: Laniatores: Cosmetidae) in the Caribbean Islands. **Cielo Disla***

11:30 - 11:45. Phylogenomics and biogeography of the Australian tarantulas (Araneae, Theraphosidae). **Ethan Briggs***

11:45 - 12:00. Revisión sistemática del género *Josa* Keyserling, 1891 (Araneae: Anyphaenidae). **Leonel Martínez***

12:00 - 12:15. Dazzling, diverse Dictynidae: A molecular phylogeny of a tailor's drawer spider family. **Katherine O. Montana***

12:15 – 1:45 p.m. LUNCH TIME

1:45 – 2:35 p.m. YOUNG RESEARCHER CONFERENCES

Moderator: Macarena González
(YouTube transmission)

1:45 - 2:10. Wasp parasitoids and spider hosts: nutrition and ecology. **Ľudmila Černecká**

2:10 - 2:35. Effects of the signalling environment on courtship displays of multimodal signalling wolf spiders. **Rowan-McGinley**

2:35 – 3:50 p.m. ORAL PRESENTATIONS – Ecology and Behavior Module.

Moderators: Mariela Oviedo-Diego and Rodrigo Willemart

2:50 - 3:05. Riding on ants: first report of the association between *Attacobius nigripes* (Corinnidae) and the leaf-cutting ants *Acromyrmex lobicornis* (Hymenoptera, Formicidae). **Gabriel Pompozzi**

3:05 - 3:20. The flicker fusion camouflage effect: effects of pattern, speed, and eye-masking on camouflage of moving stimuli in jumping spiders. **Min Tan***

3:20 - 3:35. Complementary of taxon- vs. Trait-based metrics to understand diversity patterns in Neotropical forest spiders. **Julien Pétillon**

3:35 - 3:50. Do I attract you? Analysis of the presence and role of contact sex pheromone in a pseudoscorpion. **Rocío Palen Pietri***

3:50 – 4:05 p.m. COFFEE BREAK

4:05 – 5:45 p.m. ISA GENERAL MEETING (*mixed modality, ZOOM link will be sent to registrants*)

5:45 – 7 p.m. PREMIERE OF THE DOCUMENTARY "Unexpected beauty through the eyes of explorers of the tiny world."

9 p.m. DINNER AND COSTUME DANCING PARTY (Club Uruguay, Sarandí 584)

DAY 7 (Saturday 11/3)

Blue Room - Municipality of Montevideo

(Avenue 18 de julio, 1360)

9 – 10 a.m. ORAL PRESENTATIONS

Moderators: Andrea Albín and Nelson Ferretti

9:00 - 9:15. Spider diversity and ecology in different environments in a hill system of pampa biome. **Manuel Cajade***

9:15 - 9:30. Mexican scorpions, checklist and distribution of species a historical review. **Gerardo Contreras**

9:30 – 9:45. Opiliones del Valle del Cauca, Colombia: una aproximación taxonómica y funcional a su diversidad. **Alejandro Betancourt-Caicedo***

9:45 - 10:00. Within-species diversification of male genitalia? a case study with a male-dimorphic harvestman. **Glauco Machado**

10 – 12:15 p.m. ORAL PRESENTATIONS – Ecology Module honoring Yael Lubin.

Moderators: Dinesh Rao and Carmen Viera

10:00 - 10:15. Discovery and genetic characterization of a novel social system: male aggregations, single cohort colonies, and possible lekking in a Malagasy kite spider. **Ingi Agnarsson**

10:15 - 10:30. Sicariidae do estado da Bahia (Araneae; Arachnida) com foco no gênero *Loxoceles*. **Júlia Andrade de Sá***

10:30 - 10:45. Spiders of Galapagos: habitats and species composition. **Tomás Guerrero***

10:45 - 11:00. Spider web eDNA as a tool for web ecology research. **Janko Šet***

11:00 – 11:15 a.m. COFFEE BREAK

11:15 - 11:30. Understanding the diversity and evolution of the *Aphonopelma marxi* species complex in the Madrean Sky Island Archipelago. **Karina Silvestre Bringas***

11:30 - 11:45. Criteria, challenges and future of Peruvian Opiliones for key biodiversity areas (KBAS) assessment. **Arli Ginger Ayala-Apaza***

11:45 - 12:00. O comercio ilegal de Aracnídeos na Bahia, Brasil (2020). **Esther Verena Guimaraes Franca***

12:00 - 12:15. Diversidad de la comunidad de arañas de la familia Araneidae de la Estación de biodiversidad Tiputini, Amazonía Ecuador. **Diego F. Cisneros-Heredia**

12:15 – 1:45 p.m. LUNCH TIME

1:45 – 3:45 p.m. ORAL PRESENTATIONS – Diversity, Systematics and Ecology Module.

Moderators: Paula Cushing and Luis Piacentini

1:45 - 2:00. One name to rule them all: wastebasket taxa and the unevenness of species richness across the tree of life. **Miquel Arnedo**

2:00 - 2:15. Richness and composition of Mygalomorph spiders from the Atlantic Forest, South America. **Rafael P. Indicatti**

2:15 - 2:30. Run to the hills: phylogeny of the Neotropical high-altitude tarantulas *Hapalotremus* (Araneae: Theraphosidae). **Nelson Ferretti**

2:30 - 2:45. Climate relicts: Asian scorpion family Pseudochactidae survived Miocene aridification in caves of the Annamite Mountains. **Stephanie F. Loria**

2:45 - 3:00. Diversity and distribution patterns of Xenoctenidae spiders (Arachnida: Araneae) in Peru. **Diana Silva Dávila**

3:00 - 3:15. Nuevo registro de *Tyrannochelifer floridanus* (Arachnida: Pseudoescorpiones) en el bosque de Pino-Encino en Zacapoaxtla, Puebla, México. **Erika López**

3:15 - 3:30. When a glimpse is enough: An exploration of partial mimicry of jumping spiders using neural networks. **Dinesh Rao**

3:45 – 4:05 p.m. COFFEE BREAK

4:05 – 6 p.m. 22ICA CLOSURE. Presentation of awards for oral presentations and posters.

Workshops

Workshop.

RECOGNIZING AND INTERRUPTING UNCONSCIOUS BIAS IN STEM

Andrade, Maydianne.

University Professor, University of Toronto. maydianne.andrade@utoronto.ca.

Assessment of achievement, ability, excellence, and performance affects hiring, compensation, resource allocation, and promotion across fields in Science, Technology, Engineering and Mathematics (STEM). Professor Andrade takes a non-judgemental approach to outline how common stereotypes lead to systematic biases in the assessment of excellence and achievements of women, racialized persons, and others from marginalized groups, and how these can derail equitable recruitment and retention efforts. Using data and examples from the literature with a focus on STEM, she discusses the benefits of diversity in the academic context, outlines typical manifestations of bias in academic processes, and shows how the cumulative effects of unfair assessment across the career arc can be substantive. Attendees are challenged to consider real-world scenarios and identify actions or procedures that could disrupt bias. This workshop provides evidence-based approaches for equitable decision-making, and for increasing the inclusiveness of academic cultures, particularly in STEM.

Workshop.

UPDATING THE GUIDELINES FOR ARACHNOLOGICAL PAPERS IN ZOOTAXA

Muster, Christoph[1] & Jäger, Peter[2].

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2. Senckenberg Research Institute, Arachnology, Senckenberganlage 25, D-60325 Frankfurt am Main, Germany. peter.jaeger@senckenberg.de.

Zootaxa plays an important role in the description of the planet's biodiversity – in the past years roughly one fifth of the newly described spider species were published in this journal (Jäger et al. 2021, Zootaxa 4979, 131–146). The editorial team has rapidly increased, e.g., in Araneae from one to 16 editors between 2002 and 2022. To achieve a common standard, and to guarantee a smooth and reliable communication among authors and editors, specific guidelines for arachnologial papers in Zootaxa have been proposed by P. Jäger & V. Framenau in 2007, including a template for species descriptions. However, there is no version that has been approved by the editorial team, in part the guidelines contradict themselves within the document as well as with some of the general Zootaxa guidelines, and they are outdated in some aspects. In this workshop we offer the opportunity to discuss a revised and updated version of guidelines for arachnological papers in Zootaxa. The objective is a consensus document with the required format for Zootaxa manuscripts that is agreed upon by the majority of the associate Arachnida editors. There will also be opportunities to discuss more conceptual issues (e.g., standards for diagnoses in species descriptions). The workshop will be open to all past and current Arachnida-editors of Zootaxa and those who are intending to join the editorial team.

Plenary Conference

Plenary Conferences.

THE EVOLUTION OF THE ORB-WEAVING SPIDERS: A SYSTEMATIST'S PERSPECTIVE

Hormiga, Gustavo.

The George Washington University, Washington, DC. USA. hormiga@gwu.edu.

Araneoids, the ecribellate orb-weavers, are one of the largest and more diverse lineages of spiders: about one out of every five described spider species is a member of this clade. While many araneoids build orb webs to capture their prey, the diversity of their foraging biology, lifestyles and web architecture is astonishing. Everything seems possible in Araneoidea: from the smallest species in Araneae (the symphytognathid *Patu*) to some of the largest araneomorphs (the araneid *Nephila*), from the highly intricate micro orb webs of anapids to the sophisticated aggressive chemical mimicry of the bolas spiders, from the elaborate gustatorial courtship of erigonine linyphiids to the male self-sacrificing behavior of some *Latrodectus* species. Generalizations about Araneoidea seem to be destined to fail- even the defining trait of the group, the triplet of two aggregate and one flagelliform silk gland spigots, has been independently lost in several groups such as mimetids or some mysmenids. A solid and robust hypothesis of the phylogeny of Araneoidea is essential for elucidating the origin and diversification of araneoids. In the last two and a half decades there has been a transition from morphological character matrices to large and extensive molecular datasets aiming to resolve araneoid phylogeny. In this presentation I will provide an overview of how our understanding of araneoid relationship has changed, documenting some of the recent advances and describing the current challenges to attaining a fully resolved family tree of the Araneoidea.

Plenary Conference.

MINING NEW POTENTIAL THERAPEUTIC DRUGS IN SPIDER VENOMS

Maria Elena de Lima[1,2]; da Silva, Carolina Nunes[1]; de Freitas, Ana Cristina[1]; Nunes, Kênia Pedrosa[5]; Duarte, Igor Dimitri Gama[1]; Emerich, Bruna Luiza[1]; dos Santos, Daniel Moreira[1]; dos Reis, Pablo Victor[1]; Avelar Jr, Joaquim Teixeira[1]; Abdel Salem, Mostafa[1]; Resende, Jarbas Magalhães[1]; Fagundes, Elaine Maria de Souza[1]; Tavares, Juliana Carvalho[1]; Peigneur, Steve[3]; Tytgat, Jan[3]; Borges, Márcia Helena[4]; Dourado, Lays Fernanda Nunes[1]; Pimenta, Adriano Monteiro[1]; Brito, Júlio César Moreira[4]; de Lima, William Gustavo[2]; Verly, Rodrigo[5]; dos Santos, Vera Lúcia[1] & Cunha-Jr, Armando da Silva[1].

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2. Programa de Pós-graduação em Medicina e Biomedicina da Santa Casa de Belo Horizonte, Belo Horizonte, MG, Brasil.
3. Katholieke Universiteit (KU) Leuven, Belgium.
4. Fundação Ezequiel Dias, Belo Horizonte, MG, Brasil.
5. Florida Institute of Technology, Melbourne, FL, United States.

Animal venoms are, in general, complex mixtures of salts, proteins, small molecules, such as aminoacids, biogenic amines, neurotransmitters, peptides etc. Overall, these venoms and their toxins have a wide range of pharmacological activities that are relevant tools to study different biological functions at the cellular and molecular levels. In addition, some molecules in the venoms play important roles in human diseases and have been used to design new therapeutic agentes (for review, see Silva et al., Frontiers in Biochemical Sci, 2022). We have studied some toxins with relevant activities, isolated from the venoms of two spiders very common in Brazil, *i.e. Phoneutria nigriventer* and *Lycosa erythrognatha*. Our work shows examples of toxins, or from its synthetic derivatives, which are potential tools to design new drugs. For example, PnPP-19, a synthetic peptide of 19 aminoacid residues, derived of a toxin (PnTx2-6) purified of *P. nigriventer´s* venom acts as a potentiator of erectile function, as analgesic and to treat glaucoma. Other peptide, LyeTxI, isolated from the venom of the spider *Lycosa erythrognatha*, or some of their synthetic derivatives (LyeTx1-b or LyeTxI-minimized), have show antimicrobial activity against some resistent bacteria, which represent a serious problem of health and t can originate new pandemic. In addition, some of these peptides have shown anticancer activity, *i.e.* being active against breast cancer and glioma, in studies *in vitro* and *in vivo*. In conclusion, the animal venoms show a pletora of active molecules being a source of potential new drugs to treat a diversity of diseases.

Support: Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq), Fundação de Amparo à Pesquisa do Estado de Minas Gerais (FAPEMIG) and Coordenação de Pessoal de Nível Superior (CAPES).

Plenary Conference.

CONTROL, CONTEXT, AND CHOOSINESS: FLIPPING THE LENS TO SEE FEMALE PLASTICITY IN WIDOW SPIDERS

Andrade, Maydianne CB.

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Adaptive developmental plasticity (ADP) may evolve when traits that confer reproductive success vary with context, and context is indicated by cues available during development. ADP cues trigger developmental changes, resulting in phenotypes matched to the challenges experienced as adults. We have shown that demographic variation (social context) shifts the form of sexual selection on male *Latrodectus* spiders in nature, and that male life history changes in response to demographic cues, conferring higher fitness. For short-lived *Latrodectus* males, this outcome is adaptive. For longer-lived *Latrodectus* females however, ADP of life history seems unlikely. However, for females, social context during development may predict optimal levels of adult choosiness (~the likelihood of expressing a mating preference). We studied ADP in female *Latrodectus hesperus* and *L. hasselti* by simulating natural exposure to cues of future mate availability. Females exposed to cues of high mate availability as juveniles showed increased mechanisms of choosiness in their first mating as adults. This included shifts in mating plug placement, premature cannibalism, and copulation frequency, all of which provide female control over post-copulatory sexual selection. In a related study of *L. geometricus*, we show that females that retain control in their first mating are choosy when remating. Plasticity in female mating preferences for male traits is affected by juvenile social experience in other species. This work extends understanding of ADP shaping female choice to encompass choosiness. We illustrate the complex ways ADP links population characteristics to sexual selection and support *Latrodectus* as a model clade for studies of plasticity.

Plenary Conference.

GENITALIC EVOLUTION IN OPILIONES AND ITS IMPORTANCE IN THE SYSTEMATICS OF LANIATORES

Pérez-González, Abel.

División Aracnología, Museo Argentino de Ciencias Naturales “Bernardino Rivadavia”—CONICET. Av. Ángel Gallardo 470, C1405DJR Buenos Aires, Argentina. abelaracno@gmail.com.

In the majority of Opiliones, the genitalia interact closely. A male intromittent penis deposited the sperm in the seminal receptacles of the female ovipositor. This direct "body-to-body" transfer reduces the cost of building a spermatophore and avoids sperm contact with the external environment. In this talk, we will explore the major morphological shifts in female and male genitalia through the evolutionary history of harvestmen, including traits such as: glans complexity, hypertely, muscular and hydraulic eversion and variability of ovipositor external morphology. Important insight about the genital functional morphology obtained by the first successful study of coupled male-female genitalia will be discussed. Additionally, we will examine how the importance of the male genital morphology has been strengthened over the years as a taxonomic character at all classification levels. A strong external morphological stasis is exhibited by several Laniatores groups, mainly those cryptic small litter dwellers; furthermore, a high degree of convergence in external morphology has been proven in those opilionids. These are the main factors that led to a failed typological classification system and explains why those harvestmen are currently considered a major taxonomic nightmare. Improved phylogenetic knowledge has proved that the male genital morphology is more congruent with the evolutionary history of those taxonomically difficult groups. Therefore, the male genitalia has become an indispensable taxonomic character, and its examination is mandatory to reliably identify many laniatorean clades.

Symposium: Solifugae current knowledge and future directions

Symposium “Solifugae: current knowledge and future directions”.

PHYLOGENOMIC PLACEMENT OF SOLIFUGAE IN THE CHELICERATE TREE OF LIFE AND THE HIGHER-LEVEL RELATIONSHIPS OF CAMEL SPIDERS

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The phylogenetic placement of Solifugae (commonly, sun spiders or camel spiders) has long been disputed. Morphological cladistic analyses of chelicerate phylogeny typically placed solifuges as the sister group to Pseudoscorpiones (the Haplocnemata hypothesis), with these two groups sharing an array of morphological characters. However, this placement has been challenged by other groups of anatomical characters and the implied placement of solifuges in different parts of the “arachnid” tree. Molecular phylogenetic datasets have recovered an array of unstable placements for solifuges in the chelicerate tree of life, but Haplocnemata has not been recovered among those topologies. Strategic improvement of taxonomic sampling of Solifugae is further hindered by the lack of a higher-level phylogeny of the group. Here I review recent phylogenomic advances in the phylogeny of Chelicerata, with emphasis on the placement of solifuges and acariform mites. I show that sophisticated, parameter-rich substitution models recover Solifugae as the sister group of Acariformes (i.e., Poecilophysidea), with this clade in turn sister group to Palpigradi (Cephalosomata). Recent collaborative efforts to establish a backbone phylogeny for familial relationships within Solifugae include an ultraconserved element dataset sampling all extant solifuge families. This work has shown that relationships within Solifugae accord closely with biogeographic distributions, with the basal split of the order corresponding to Laurasian and Gondwanan clades. These results substantiate a modern, phylogenomically-informed classification system for Solifugae.

Symposium “Solifugae: current knowledge and future directions”.

SEXUAL SELECTION IN THE BLINK OF AN EYE: MATING STRATEGIES AND REPRODUCTIVE CHARACTERISTICS IN SOLIFUGES (ARACHNIDA, SOLIFUGAE).

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Models should be tested in as many groups as possible. In this sense, disciplines like sexual selection should explore new and diverse animal groups to help understand patterns and test hypotheses regarding the evolutionary origins and maintenance of reproductive tactics and associated traits. Solifuges represent an exceptional group that has long been neglected in the sexual selection field. Solifuge reproductive behavior is unique among arachnids and more diverse than previously thought. Old studies suggest that these voracious arachnids appear to exhibit high sexual conflict. However, mating encounters in many species involve periods of apparently male-induced female inactivity or cooperation during sperm transfer. Reproductive characteristics in females and males strongly suggest many diverse mechanisms of sexual selection. We will discuss precopulatory mating patterns, the role of the female and male during mating, and the influence of sexual selection during different stages of mating. In addition, it provides an updated analysis of how postcopulatory sexual selection may be acting on these amazing arachnids.

Symposium “Solifugae: current knowledge and future directions”.

NORTH AMERICAN CAMEL SPIDERS (ARACHNIDA, SOLIFUGAE, EREMOBATIDAE): SYSTEMIC REVISION AND BIOGEOGRAPHY OF AN UNDERSTUDIED TAXON (ARACHNIDA, SOLIFUGAE)

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Over the past two decades the Denver Museum of Nature & Science arachnology lab’s research has been focused on the evolutionary history, taxonomy, morphology, and behavior of solifuges in the North American family Eremobatidae. We will present an overview of the goals of this research that include: revising the phylogeny of specific taxonomic groups within the family using Ultra Conserved Elements (UCE), re-assess the morphological variability and diagnostic utility of characters defining clades, and examine the species distribution and biogeographic implications of those distributions. The family Eremobatidae is monophyetic; however, certain taxonomic affiliations, particularly subfamily designation, were put in question in an earlier multi-locus phylogenetic analysis. Our goals are to ultimately use the revised phylogeny to re-assess the taxonomy, elevate new generic placements, and re-assess current species groups. In addition to the UCE analysis, our lab is also examining potential morphological synapomorphies that may unite well-supported clades, as well as implementing modern techniques for integrated taxonomy and species delimitation.

Symposium “Solifugae: current knowledge and future directions”.

CAMEL SPIDER TRAIT EVOLUTION DEMONSTRATES REPEATED PATTERNS OF CONVERGENCE OF HISTORICALLY DELIMITING CHARACTERS (ARACHNIDA: SOLIFUGAE: EREMOBATIDAE)

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The arachnid order, Solifugae, are recognized from the other arachnid orders by the possession large, powerful jaws or chelicerae. Chelicerae functionally serve both males and females for a variety of shared biological functionalities, however, despite some overlapping utility in both sexes, chelicerae are sexually dimorphic. Male cheliceral morphology is the leading diagnostic character system in solifuge systematics and is the basis for much of solifuge current taxonomy. Female chelicera, on the other hand, is reportedly deeply conserved and much of the species identification is based on female operculum morphology. Such structures can vary across multiple taxonomic levels; however, taxonomic descriptions are often restricted to qualitative descriptions of size and complex shapes. Limiting shape descriptions to a single qualitative descriptor excludes the consideration for variation that may exist within genera, or between populations of the same species. To elucidate patterns of chelicerae and operculum trait evolution within solifuges (Arachnida: Solifugae: Eremobatidae), we used a 2-dimenstional (2D) morphological analysis using an Elliptical Fourier (EF) approach for closed outlines, in addition to an analysis of traditionally used measures in a phylogenetic context. Using ancestral state reconstruction (ASR) and ultra-conserved elements (UCEs), we re-assess the utility of female cheliceral morphology, and we evaluate which commonly used characters reflect shared, derived ancestry. Investigation into ubiquitously used character sets will be used to better inform future taxonomic revisions of the group.

Symposium “Solifugae: current knowledge and future directions”.

INTEGRATIVE TAXONOMIC APPROACHES IN RESOLVING THE POLY- AND PARAPHYLY OF EREMOBATINE CAMEL SPIDERS (SOLIFUGAE: EREMOBATIDAE)

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The North American family Eremobatidae is the only solifuge family to have an exemplar, Sanger sequence-based molecular phylogenetic framework in which to revise traditional morphology-based taxonomic designations. Next generation sequencing and modern bioinformatics approaches allow reliable, expanded sequencing of historical museum samples to complement and improve upon the previous framework. Here, we take an integrative approach to an ongoing taxonomic revision of *Eremothera* Muma 1951 (a ditypic genus), and multiple species groups of *Eremobates* Banks 1900, leveraging ultra-conserved elements (UCEs), expanded taxon sampling, species distribution modelling, as well as traditional and advanced morphological approaches. The preliminary results of this approach indicate that the *Eremobates scaber, E. angustus,* and *E. pallipes* species groups are not monophyletic, and current taxonomic designations based upon traditional morphological character systems may overestimate diversity within *Eremobates,* as currently described. New morphological characters need to be developed to reflect monophyletic groupings in the molecular analysis, reconcile the taxonomy, and split *Eremobates* into new genera. In addition, molecular and morphological results indicate multiple putative new species from the United States and Mexico.

Symposium: Advances in the role of spiders in agroecosystems

Symposium “Advances in the role of spiders in agroecosystems”.

TROPHIC INTERACTIONS IN AGROECOSYSTEMS: IMPLICATIONS FOR BIOLOGICAL CONTROL

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Spiders are abundant predators in agroecosystems throughout the world and their propensity for voracious feeding activity implicates them as valuable biological control agents. However, conflicting evidence persists as to their true role in pest management. They are widely acknowledged to feed on a plethora of pest species but laboratory and field evidence suggests “non-pest” prey constitute preferred food choices. Here, we examine the role of spiders in agroecosystem food webs through an integration of behavioral studies, field observation, site selection and tenacity studies, molecular gut-content analysis and mathematical modeling to tease apart the role of spiders in biological control. Extensive evidence exists to suggest spiders play an important role in food web processes, including biological control, but they consistently choose locations for site selection replete with non-pest prey. Recent developments of mathematical models have further refined out understanding of these processes and deciphered food preference habits in the field. These results will be discussed in the context of agroecosystem food webs and whether spiders can be integrated into biological control strategies.

Symposium “Advances in the role of spiders in agroecosystems”.

VARIATIONS IN LIFE HISTORY TRAITS OF LYCOSID SPIDERS IN AGRO-SYSTEMS

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Together with the development of large spatial-scale databases on spider traits (such as the World Spider Trait database: Lowe et al. 2020, Pekár et al. 2021), the question of using values in contexts other than where traits were assessed is given more and more interest, especially given the inter- and intra-individual variations sometimes reported (see e.g. Suter & Benson 2014). To test whether similar results were found using trait database or measured body size values (BS), we calculated community weighted mean for prosoma length of Lycosid spiders based on trait database values (abbreviated CWMb). We collected spiders in 308 fields under conventional or biological agriculture (Djoudi et al. 2018). We then modeled both CWMb and BS values as a function of agriculture type with site and station as random effects in a multivariate model. For BS the model also included sex variable. We performed the analyses in a Bayesian framework using brms (Bürkner, 2017) with default priors and parameters. Agriculture type effect on spider body size CWM has a low probability of existing (pd = 97.60%, Median = 0.35, 89% CI [0.092, 0.655]). Its significance remained undecided (8.0% in ROPE). On the other hand, agriculture type effect on measured spider body size has a very high probability of existing (pd = 100%, Median = 0.10, 89% CI [0.062, 0.142]) and can be considered significant (0% in ROPE). We subsequently examined the effect of intraspecific variability on patterns of long-distance dispersal (propensity ballooning) and body size traits.

Symposium “Advances in the role of spiders in agroecosystems”.

SPIDERS AS STUDY MODELS IN AGROECOSYSTEMS: CASES FROM URUGUAY

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Agriculture is one of the most relevant economical activities in Neotropical countries. Several countries have focused their efforts on increasing their crop production. Unfortunately, the high food demand has also lead to low sustainability practices like the excesive use of pesticides. Conservation biological control is a very useful tool, since it takes advantage of the local diversity, which is specially high in the Neotropical region to control pests. Interestingly conservation biological control has not been implemented in Latin America, therefore the potential benefits of local fauna are unknown. Spiders are one of the most relevant groups of arthropod predators in crops. Despite their importance, only few studies have evaluated its role as potential biological control in the Neotropical region, especially in small countries like Uruguay. Herein we summarize research focused on the relevance of the spiders as biological control agents in Uruguay. Firstly we show that among spiders, Lycosidae is the most abundant family together with Linyphiidae, being one of the most representative families. Abundance results are complemented with data regarding the prey acceptance and feeding behavior of Lycosids spiders which suggest these species are able to prey on arthropods such as larvae and bugs, which are the main pests in some crops such as soybean. Finally we show the negative effects of some pesticides on the life history of lycosid spiders. These results not only highlight the importance of spiders in crops but also suggest them like a potential ecotoxicological model in the Neotropics.

Symposium “Advances in the role of spiders in agroecosystems”.

WINTER-ACTIVE SPIDERS CAN CONTROL INSECT PESTS

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The role of generalist predators, such as spiders, in the pest control has been neglected because generalists are not able to track pest populations. Generalist predators may provide biocontrol service if (1) they are abundant in an agroecosystem, (2) intraguild predation is low, (3) alternative prey is scarce, and (4) pest population increase is retarded. These conditions are met in fruit orchards during winter and in early spring. Only few spider species are active during winter, while the majority of arthropod enemies are dormant. Winter-active spiders include species of the genera *Anyphaena*, *Clubiona* and *Philodromus*. We assessed their potential in reduction of pests, namely *Cacopsylla pyri*, using simulations of a mathematical model, gut content analysis, and experimental manipulation *in situ*. Using a discrete non-linear model of an intraguild predation system we found that winter-active spiders can considerably suppress the pear psylla population. A stronger suppression should be in warmer winters. Molecular gut content analysis proved the winter-active spiders prefer and catch mainly psyllids to other prey during winter. *Anyphaena* had the highest predation activity on psyllids compared to *Clubiona* and *Philodromus*. The frequency of intraguild predation among winter-active spiders was low. Artificial increase of habitat complexity, by installing corrugated cardboard bands around the trunks and branches of pear trees, increased predation pressure on the pear psylla. Our results suggest more attention should be given to encouraging generalist predator populations in other systems than orchards, even in periods of agricultural quiescence.

Symposium “Advances in the role of spiders in agroecosystems”.

THE IMPACT OF INTRASPECIFIC VARIABILITY ON THE BIOCONTROL POTENTIAL OF SPIDERS

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Although spiders, on average, significantly contribute to pest suppression at the global scale, the effect strength and direction are highly variable. This variability is usually attributed to the differences in interspecific community composition while the intraspecific variability is often overlooked. However, the impact of intraspecific differences on ecological dynamics can significantly contribute to the overall variability and sometimes even surpass the interspecific differences. It is therefore important to understand how intraspecific differences affect predator-prey and predator-predator interactions but also how they are generated in agroecosystems. Using our case studies, I show that aggressive top-predator spider individuals/populations have higher capture rates but also wider trophic niches than non-aggressive individuals/populations as they incorporate larger and more dangerous prey, including other spiders. The aggressive individuals/populations can increase predation on size-structured or larger spectrum of pests, but they also engage more in intraguild interference reducing overall predation pressure on pests. The pest suppression efficacy of behavioural type of top-predators depends on the relative abundances of top-predator and mesopredator. The distinct diet selection between individuals/populations can also arise not only due to the behavioural differences but also due to the prey community composition between patches and sites due to the positive and negative switching in generalist spiders. In agroecosystems, the intraspecific variation in behaviour and diet selection by spiders are driven by food-limitation, interference interactions, and the application of pesticides. The intraspecific variation can be therefore influenced by management and the presence of semi-natural habitats acting as donor habitats for agroecosystems.

Symposium: Subsocial and social spiders

Symposium “Subsocial and Social Spiders”.

TAKING CARE OF THE ENEMY: A SUBSOCIAL SPIDER WITH EXTENDED MATERNAL CARE BODYGUARDING COCOONS OF DARWIN WASPS

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Extended maternal care is an uncommon behaviour in spiders that is expected to increase offspring survival. The theridiid *Chrysso compressa* is a subsocial spider with females that care for the offspring until the juvenile stage and guard egg sacs inside roof-shaped shelters constructed using leaves of shrub vegetation. Here we present natural history data on a Darwin wasp (*Tromatobia* sp.) attacking *C. compressa* egg sacs in the Atlantic Forest of southeastern Brazil. This is to the best of our knowledge the first record of *Tromatobia* preying on *Chrysso* eggs. We collected 22 egg sacs of *C. compressa* between January and May 2021/22, of which 22.7 % had all the egg mass consumed by larvae of *Tromatobia*. Egg sacs harboured an average of 46 ± 21 eggs, with light colouration and round shape. Maternal care included the protection of egg sacs under the female spider body, between the forelegs and held by the pedipalps. Egg sacs attacked by *Tromatobia* had their shape (oval and elongated) and colour (grey) altered after the development of the wasp larvae. At this stage, the cocoons became exposed, adhered to each other, and interspersed with silk remnants of the original egg sac. Despite the structural modifications, female spiders kept the guarding behaviour and adopted attacked egg sacs that we offered from other females. Unlike some well-known parasitoid Darwin wasps that induce behavioural manipulations on their host spiders, here we show an alternative strategy of taking advantage of a pre-existing behaviour provided by subsocial spiders.

Symposium “Subsocial and Social Spiders”.

EXPLORING THE SOCIAL BRAIN HYPOTHESIS IN SPIDERS

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The Social Brain hypothesis has traditionally been assumed as a positive relationship between sociality and neural investment. At its core, it is less about group size and more about the cognitive capacity to manage complex (social) situations. The hypothesis has been tested in vertebrates, insects and, more recently, in *Anelosimus* spiders species. Because social *Anelosimus* engage in cooperative prey capture and maternal care, but individually they are less competent in both tasks compared to related subsocial species, researchers predicted this redundancy would impact the cognitive demands on the individuals, reducing the brain investment in social species. As hypothesised, the social *Anelosimus* showed a smaller arcuate body (cognitive centre of the brain spider) when compared to the subsocial Anelosimus, arguing the brain size may not be explained just by the sociality but by specific attributes of the social group. Social Huntsman spiders (*Delena cancerides*) have more intricate social behaviour, including active hunting instead of snare building and recognising kin. Although this specie engages together in predation and sharing prey, our preliminary MicroCT scans, with limited samples, have shown no difference in the volume of the arcuate body in the social Huntsman compared to the related solitary huntsman. It is a preliminary result and indicates the complex behaviour in this group may not result in a higher neural investment corroborating the results found in Anelosimus. We plan to analyse more samples and species to add to our knowledge of social spiders.

Symposium “Subsocial and Social Spiders”.

ADAPTIVE SIGNIFICANCE OF DIFFERENCES IN BEHAVIORAL AND LIFE-HISTORY PATTERNS BETWEEN PROLONGED-SUBSOCIAL AND SOLITARY HUNTSMAN SPIDER SPECIES

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While most huntsman spiders (Sparassidae) live solitarily beyond a short period of egg sac guarding and maternal care, five prolonged-subsocial species live in large matrilineal groups where a single adult female retains reproductive dominance and multiple sibling cohorts remain together until sexual maturity or into adolescence depending on the species. Observations from >42 species of social and solitary huntsman during >20 years of comparative lab and field study reveal patterns of social evolution. We evaluated duration of association, patterns of prey sharing, clutch size, retreat use, 1st-feeding instar, and other aspects of life-history in the framework of our recent molecular phylogeny (Gorneau et al., 2022) to assess whether there are characteristics found only in social species or whether these traits are derived versions of typical biology of solitary species. To identify biological and group-living traits that are correlated, the D-test, which examines stochastic character maps in a pairwise manner, was implemented. Since sharing prey is a key feature of sociality in spiders, we intensively compared patterns of prey sharing among the huntsman spiders. Our results show a distinct suite of biological and behavioral traits in prolonged subsocial huntsman that are associated with evolution of group-living, including a unique non-feeding instar, and other traits gradually derived from those in solitary species, such as smaller clutches, larger permanent retreats, and multiple tolerant sibling cohorts which results in greater prey access via sharing. Finally, our results illuminate increased cooperation in *Delena cancerides* compared to other prolonged-subsocial species with similar behavior and life-history traits.

Symposium “Subsocial and Social Spiders”.

ALIENS ON THE WEB: DISTRIBUTION AND ABUNDANCE OF COMMENSALS (*Philoponella feroka*, ULOBORIDAE) ON SOCIAL SPIDER WEBS (*Stegodyphus sarasinorum*, ERESIDAE)

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Habitat patch size and connectedness of patches are known to influence species occupancy. Social spider webs are long-lasting structures where multiple colonies are often interconnected with a common web. Such social spider webs can be imagined as interconnected habitat patches that facilitate occupancy and movement of other species such as commensals. Social spiders *Stegodyphus sarasinorum* (host, eresidae) build webs on bushes (3-dimensional webs) or on fences (2-dimensional webs) to catch prey. These host webs are also used by commensal *Philoponella feroka* to live and forage, although *P. feroka* sometimes also build their own orb web anchored to host spider webs. In this study we examine the factors influencing commensal distribution and abundance on *S. sarasinorum* webs. We hypothesize that higher number of commensals are found on a) 3-d webs than 2-d webs; b) clustered (multiple, interconnected) colonies than solitary colonies and c) ‘unmaintained’ webs than webs that are routinely maintained. We found that commensals are more abundant on 3-d webs than 2-d webs. 3-d webs with multiple radiating sheet s perhaps provide structural support for commensals’ own webs. Large interconnected clustered colonies had significantly more commensals compared to solitary colonies. ‘Unmaintained’ webs (characterized by prey carcass, leaves or holes) had significantly more commensals than webs that were routinely maintained. Social spiders are well known for their prey capture and web-building behavior. Our study explores how other aliens such as commensals exploit social spider webs.

Symposium “Subsocial and Social Spiders”.

RAINY SITES HARBOR BIGGER INSECTS AND PREDICT THE OCCURRENCE OF SOCIAL SPIDERS

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Geographical patterns in insect size can predict the occurrence of arthropod predators like spiders. Insect size variationis typically associated with temperature gradients, where warmer climates lead to either increases, decreases, or no change in body size. Less studied is how precipitation (and thus primary productivity/resource availability) may limit insectsize. On the eastern slopes of the Ecuadorian Andes, consistent with temperature placing an upper limit on insect size, insects are bigger in the lowland rainforest compared to higher elevations. This elevationalpattern correlateswith the occurrence of social spiders in these areas, which require habitats with an abundance of large insects. Interestingly, the lowland coast of western Ecuador, with similarly warm temperatures throughout, lack social spiders in dry areas, suggesting a secondary role of temperature. We thus tested whether social spiders are absent from these areas due to rainfall patterns limiting insect size, rather than temperature/elevation. We also tested whetheramong site variation in insect abundance also influencesthe occurrence of social spiders. By sampling insects simultaneously with social spidersalong a precipitation gradient we found that insects at the wettest sites were bigger compared to the driest sites, but not more abundant. The occurrence of social spiders in western Ecuador was predicted by insect size rather than abundance, consistent with the hypothesis that it is insect size that sets a limit to the size of social spider colonies. Together, these results demonstrate that annual precipitation can play just as prominent a role on insect size as does temperature along elevation gradients, thus significantly influencing the distribution of Neotropical social spiders.

Norman I. Platnick Tribute

Norman I. Platnick Tribute.

NORMAN'S AMAZING MIND: HIS AUSTRALASIAN CONTRIBUTIONS AND CATALOGUING EXPLOITS

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Norman Platnick's contributions to spider taxonomy are unsurpassed in the modern era having named 2,023 new species, 158 new genera and several family-group names. He often placed them in a phylogenetic context adopting a cladistic framework during the nascent era of Hennig's ground-breaking method and was instrumental in promoting cladistic systematic methods more generally. The Australasian biota was dear to Norman's heart, and he visited Australia, New Caledonia and New Zealand several times to undertake fieldwork and visit museum collections and colleagues. His focus on the Australian spider fauna resulted in the description of 506 species and 46 genera from that continent, which represents a remarkable 12.6% of the species level diversity. For the Australian, New Zealand and New Caledonia faunas, his lifelong collaboration with Ray Forster resulted in numerous classic contributions to both taxonomy and higher-level systematics, with a focus on 'southern-temperate' and Gondwanan spider lineages. Norman was also an inveterate and phenomenal cataloguer, suffering from what Ray Forster once described as "cataloguer's disease". We take the opportunity to offer our personal reflections on an amazing arachnologist and his contributions to the field.

Norman I. Platnick Tribute.

TWENTY YEARS OF NEOTROPICAL SPARASSIDAE: WHERE ARE WE NOW?

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Sparassidae are commonly known as huntsman spiders because of their hunting habits and speed. They are included in the RTA clade due to the presence of a retrolateral tibial apophysis in the male palps, but their position within the clade is still debatable. The monophyly of the family is undisputed and supported by several synapomorphies such as the dorsal, flexible trilobate membrane at the distal end of leg metatarsi, apical indentation of the claw tufts and trichobothrial setae with smooth bases. Currently it comprises 1341 species distributed in 95 genera and 10 subfamilies. Nevertheless, the internal structure of the family is still not resolved and many genera remain *incertae sedis*. In 2003, when I started working on the group, the Neotropical fauna included 154 species in 25 genera of which eleven were monotypic. Twenty years later, the numbers grew significantly and, to date, Neotropical Sparassidae amount to 280 species in 31 genera. Of the original genera, five were synonymized and one transferred to another family. Twelve genera were revised and ten newly described. Although a lot of work has been put into the understanding of Sparassidae diversity there is still much work to be done. The number of new species increases with every new locality explored and many of these cannot be assigned to any of the known genera. Thus, I expect to see an even higher increase in the number of huntsman species and genera in the next few years to come.

Norman I. Platnick Tribute.

TOTAL EVIDENCE ANALYSIS WITH FOSSILS AS TERMINAL TIPS: BURMA TERRANE SHOWS GONDWANAN AFFINITIES AND TRANSPORTED LINEAGES TO THE NORTHERN HEMISPHERE

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Burmese amber is a significant source of fossils that documents the mid-Cretaceous biome. This deposit is on the Burma Terrane, which broke away from Gondwana and later collided with Asia, although the timing is disputed. Palpimanoidea is a dispersal-limited group that is shown to have been a dominant element of the spider fauna in the Mesozoic, and has an extensive fossil record, particularly from Burmese amber. Using a Total Evidence approach (combining 275 morphological characters with high-throughput molecular sequence data), and examining fossils from 12 different deposits around the world, the evolutionary relationships of both living and fossil palpimanoids are examined. Divergence dating with fossils treated as terminal tips, followed by analysis of ancestral range estimations, shows that palpimanoid diversification is congruent with Pangaean continental break-up. These results suggest that the Burmese amber fauna has Gondwanan affinities, with the Burma Terrane serving as a ferry, transporting lineages from Gondwana to Asia when collision occurred around the Late Cretaceous.

Norman I. Platnick Tribute.

COLECCIÓN NACIONAL DE ARÁCNIDOS (CNAN) IBUNAM, ARACHNIDS, FAUNISTICS, AND MUSEOMICS

González-Santillán, Edmundo.

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The CNAN is the largest scientific collection of arachnids in Mexico and despite created in 1997, it already contains ten orders of arachnids distributed in Mexico. Due to the immense diversity of the order Acari, our institute created a separate collection (CNAC). The CNAN possesses approximately 35,000 specimens that correspond to circa 1,500 arachnid species. Additionally, it holds 283 holotypes and 2,057 paratypes. Our public database contains 13,968 lots of specimens that passed a rigorous filter of curatorial quality. However, hundreds of specimen lots await processing and cataloging, the curatorial work is quite demanding. The future development of the CNAN include: 1) To digitalize type material to disseminate it online. 2) To digitalize regular material for curatorial purposes. 3) To create an online repository of literature. 3) To create a cryo-collection of preserved tissues. 4) To create a barcoding database focused on endangered arachnid species by trade pet and other extractive use to help expedite their ID and preservation. Two biodiversity approaches will be applied to arachnids, an intensively faunistic study in strategic spots to statistically estimate the arachnid diversity in Mexico and use the specimens deposited in the CNAN to discover the genetic, taxonomic, and evolutionary biodiversity present in our country by sequencing UCEs and use other high throughput techniques.

Norman I. Platnick Tribute.

PHYLOGENOMIC ANALYSES OF THE ENIGMATIC ORDER RICINULEI

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Aside from his obvious and plentiful contributions to spider taxonomy, Dr. Norman Platnick also contributed significantly to the taxonomy and systematics of the arachnid order Ricinulei, describing 13 species and one genus. The Ricinulei are an uncommon and enigmatic taxon with ~100 described species that are largely restricted to the tropical regions of Central and South America and central Africa. This lineage has received relatively moderate attention from a modern molecular perspective, and current taxonomy within this group is based entirely on morphology. Previous molecular work includes one study which largely relied on Sanger sequencing of COI and a small transcriptomic data set of five samples, and a subsequent study adding three more Sanger markers and an additional two transcriptomes. Here we present a comprehensively sampled phylogenomic analysis of the order Ricinulei using sequence capture of ultraconserved elements, including 96 samples from across its distribution. Phylogenetic results show that, of the three described genera (*Ricinoides*, *Cryptocellus*, and *Pseudocellus*), only the genus *Ricinoides* from central Africa is monophyletic across all analysis types. Based on these phylogenetic results I will discuss both the taxonomic and biogeographic implications.

Young researcher conferences

Young Researcher Conferences.

IS SPECIES DISCRIMINATION UNDER FEMALE OR MALE CONTROL? AN EXPERIMENTAL APPROACH USING WIDOW SPIDERS

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Sexual signals may vary among individuals within a species and also among congeners, providing information used for mate choice and species discrimination. Understanding patterns of receiver responses to signal diversity can give insight into how sexual signals are related to processes initiating, mediating, or following from species diversification. Here I study the stages of courtship and outcomes of mating interactions between species representing the two different clades in the genus *Latrodectus*, using four species (mactans clade: *L. mirabilis [South America], L. hesperus [North America], L. hasselti [Australia]; geometricus clade: L. geometricus [North America]*) from different biogeographical regions. Male *Latrodectus* are in control of whether or not they court a particular female, but females are much larger than males and likely to have control over copulation. I paired males and females in all possible crosses of the four species and compared courtship and copulation frequency of heterospecifics relative to conspecifics. Although copulation was less common with heterospecifics overall, there was variation in discrimination as a function of species and sex. In some cases males courted females of all heterspecifics, but copulation success was lower than courtship rates with some species, suggesting female control over discrimination. In other species, male courtship was significantly reduced relative to conspecific pairings, showing male discrimination. Overall, evidence for species discrimination within the species of the *mactans* clade increased with genetic distance. However, for *L. geometricus* (*geometricus* clade) discrimination decreased with genetic distance. I speculate about the cause of these different patterns.

Young Researcher Conferences.

WHERE, WHEN, HOW AND WHY?: PHYLOGEOGRAPHY OF TWO ATYPICAL WOLF SPIDERS THAT INHABIT THE SANDY COASTS OF SOUTH AMERICA

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Phylogeography is a bridge discipline between population genetics and phylogenetics, which integrates information to elucidate the processes that originate and shape the distribution of genetic lineages in space and time, at intraspecific and interspecific level, of closely related species. After 35 years from the origin of the discipline, there are still few studies in spiders and even less in South America. The wolf spiders *Allocosa marindia* Simó, Lise, Pompozzi & Laborda, 2017 and *A. senex* (Mello-Leitão 1945) inhabit the sandy coast of South America. Both species exhibit extraordinary morphological, ecological and behavioral adaptations to inhabit these environments, which makes them excellent models to understand the underlying factors that shape the diversity of sandy coasts in the region. Results obtained from genetic, environmental and behavioral data are presented and discussed, seeking to reconstruct the evolutionary history of these species and contribute to the knowledge of the biogeographic processes that could occur in the region.

Young Researcher Conferences.

WASP PARASITOIDS AND SPIDER HOSTS: NUTRITION AND ECOLOGY

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Only a small proportion of known parasitoid groups are associated with a dangerous host type. The exceptions are wasps from *Polysphincta* group (Hymenoptera). Wasps from this group belong to koinobiont ectoparasitoids that are strictly associated with spiders. In this talk we will evaluate ecological and behavioural data in both organisms. In the first part of the talk we studied effect of nutritional composition on the fitness of consumers in a quarto-trophic food web. We reared fruit flies on three different treatments and observed several fitness-related traits both in the predator and the parasitoid. In spiders, we did not find significant differences among treatments in their body size and the probability of building a cocoon web. In parasitoids, we failed to find significant differences among treatments in the latency to wasp pupation, the duration of pupation and body composition. Our results suggest that the quality of the food of the primary consumer had little effect on the fitness of the organism at the fourth trophic level. In the second part of the talk, we studied the changes in parasitation rate of web-building spider hosts by hymenopteran parasitoids in forest ecotones along the elevation gradient in Central Europe. Except for elevation we also tested the impact of habitat type and traits of spider hosts. We found that the overall mean parasitism rate was relatively low (4%) but the differences among localities were considerable. The parasitisation rate showed a hump-shaped relationship with elevation, differed significantly among web types and also habitat type influenced the parasitism rate.

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Young Researcher Conferences.

INSIGHTS ABOUT DIVERSIFICATION PROCESSES FROM SPIDERS OF THE PACIFIC

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Diversification processes happen at different levels of the biological complexity. Islands, as natural experiments, have been key to develop ideas on evolutionary biology; and spiders, due to their dispersibility, are ideal model organisms to test them. The study of the early stages of adaptive radiation is challenging, however extensive field sampling and population genetic data from the Hawaiian *Tetragnatha* Latreille, 1804 (Tetragnathidae) spiders have demonstrated the co-occurrence without hybridization of species from the same ecomorphology. It reinforces the idea that even in adaptive radiations an initial degree of allopatry followed by secondary contact is required. On Rapa Nui there is another endemic *Tetragnatha*, however its historical extinction prevented assessing how a member from this genus would have evolved on a small island. Although, ancient DNA methods allowed to phylogenetically place this species and distinguish it from another, recently introduced, congener. The expression of diversification on a species from a small island was successfully studied on *Wendilgarda galapagensis* Archer, 1953 (Theridiosomatidae) from Isla del Coco. This spider is an example of intraspecific adaptive radiation with niche partition due to a non-genetically determined polymorphism on web building behavior. But, there are also genetically determined polymorphisms on island and mainland species, as in the parallel evolution of color variation on several Theridiidae, including the Hawaiian happy face spider and the *Selkirkiella* Berland, 1924 from the Juan Fernández archipelago and southern South America. All these examples only provide particular insights about diversification processes, additional studies are needed to further test hypotheses used to explain those phenomena.

Young Researcher Conferences.

TESTING MULTIPLE HYPOTHESES ABOUT THE HISTORY OF NEOTROPICAL RAINFORESTS WITH A COMPLETE PHYLOGENY OF SPINY ORB-WEAVERS (*Micrathena*)

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The Neotropical region is the most diverse on the planet, largely due to its mosaic of tropical rainforests. Multiple tectonic and climatic processes have been hypothesized to play a role in generating this diversity. We use the spiny spider genus *Micrathena* (Araneidae) as a model to study the biogeographic history of Neotropical rainforests. Its ~120 species are distributed from Mexico to Argentina, including the Antilles. We estimated a complete, dated phylogeny using morphological data for all species and molecular data for 79 species. This resulted in a mainly robust phylogeny largely supporting previous taxonomic proposals, although with uncertainty in the phylogenetic position of some species. The genus began to diversify about 25 million years ago. We estimated ancestral distributions and the timing and direction of dispersal events, as well as identified areas where diversity was generated, while accounting for phylogenetic and biogeographic uncertainty. Andean cloud forests generated the most species, but Amazonia was the major source of species for adjacent areas. The dry diagonal received species from other areas but generated very little diversity. There was intense species exchange between Central and South America, with 20 dispersal events beginning at least 20 million years ago, indicating that *Micrathena* dispersed between these continents before closure of the Isthmus of Panama. Sampling all species of the genus was fundamental to some of the conclusions, especially in identifying the Andes as the area that generates the most species. This study highlights the importance of a solid and complete taxonomic sampling in biogeographic studies.

Young Researcher Conferences.

BARK SPIDERS (ARANEIDAE, *Caerostris*): NEW INSIGHTS INTO THE EVOLUTIONARY AND NATURAL HISTORIES OF AN EXCEPTIONAL GENUS

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Bark spiders of the genus *Caerostris* Thorell 1868 are large and noticeable araneids inhabiting the Old-World tropics. Although common in nature and in collections, their natural history became better known only recently. This is surprising given their fascinating female-biased sexual size dimorphism and web biology. The small males exhibit behaviors indicative of sexual conflict, such as opportunistic mating, genital mutilation and plugging, mate binding, and even oral sexual contact. Some *Caerostris* species in Madagascar build orb webs considerably larger than any other spider species reaching extremes in Darwin's Bark spider (*C. darwini*). This species that uniquely suspends its webs across small rivers and lakes employs silk, whose toughness is superior to all other known silks. These facts have spawned lively genomic and silk material research into this species: *C. darwini* has a genome well annotated for silk proteins. *Caerostris* is phylogenetically important, being the basal most araneid genus. By using this new evidence in phylogenomic research, we to reinterpret the evolution of *Caerostris* and its natural history, bearing on araneid systematics, on biogeography of Madagascar, and the evolution of extraordinary morphological variability, sexually selected traits, and sexual size dimorphism.

Young Researcher Conferences.

EFFECTS OF THE SIGNALLING ENVIRONMENT ON COURTSHIP DISPLAYS OF MULTIMODAL SIGNALLING WOLF SPIDERS

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Animal communication is critical for survival and reproduction as it facilitates essential activities, such as coordinating mating and social interactions, deceiving prey, and deterring predators. However, animals inhabit dynamic and heterogenous environments that can alter the transmission and detectability of communication signals. Thus, environmental heterogeneity likely plays a significant role in shaping the diversity of animal signals observed in nature. Some animals may have evolved displays that allow them to communicate across various environmental conditions, while others may have become specialized and only communicate efficiently within a narrow range of environmental conditions. To gain insight into the role of the signalling environment on the evolution of animal communication, we tested the function of courtship signalling across various environments in species of *Schizocosa* wolf spiders (Lycosidae) that vary in their courtship displays. Courtship displays of the genus *Schizocosa* always involve the use of substrate-borne vibratory signals, and species' displays vary in the presence of visual signals. There is also substantial variation in the complexity of both vibratory and visual signals within the genus. We ran mating trials at three light intensities (bright, dim, and dark) and on different substrates (leaf litter, pine litter, grass and sand) to examine how signalling environments affected courtship behaviour and copulation success. The effects of the environment were species-specific, but included effects on mating success and courtship behaviour, as well as shifts in sexual selection across environments.

Young Researcher Conferences.

PHYLOGEOGRAPHY OF TWO ASIAN GOLDEN ORBWEAVERS

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We explored phylogeographic patterns in two golden orbweaver species, both inhabiting large, partially overlapping parts of Asia, but exhibiting markedly different biologies: the giant orbweaver (*Nephila pilipes*), found in low-elevation rainforests throughout South and South-East Asia, Australia and the Pacific, and the Joro spider (*Trichonephila clavata*), predominantly distributed in subtropical to temperate habitats from the Himalayas to Japan. We tested the prediction that differences in the species' life history traits and environmental conditions, such as habitat seasonality, range size, dispersal propensity, and colonial lifestyle, would be reflected in their respective population genetic structures. Additionally, we tested the hypothesis that melanic *N. pilipes* females are not only a color variant, but are in fact representatives of a separate species, *N. kuhli* (Doleschall, 1859). To test these predictions, we employed a combination of phylogenetic and population genetic analyses on single nucleotide polymorphisms, obtained by restriction site associated DNA sequencing (RAD-seq). We uncovered previously unknown patterns in genetic structure in both species that could be explained in light of palaeoclimatic and palaeogeological factors. Polyphyletic placement of melanic females in the species phylogeny rejected the *N. kuhli* species hypothesis. The relatively low genetic structuring detected in both the giant orbweaver and the Joro spider implies that, despite the differences in biology and environments, both species successfully maintain gene flow across large distances and over geographic barriers.

Oral presentations

Oral presentation.

ONE NAME TO RULE THEM ALL: WASTEBAKET TAXA AND THE UNEVENNESS OF SPECIES RICHNESS ACROSS THE TREE OF LIFE

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Diversity is unevenly distributed across the tree of life. While biological factors such as shifts in speciation and extinction rates driven by abiotic changes or ecological opportunities are frequently invoked to explain such unevenness, a poor taxonomy is frequently the simpler yet less flamboyant explanation. The incorporation of molecular data into systematics in the last quarter of the 20th century, uncovered numerous instances of non-natural groups across taxonomic ranks, most of which had not been previously subject to rigorous quantitative phylogenetic analyses. The six-eyed red devil spiders (Dysderidae), include small to mid-size, ground dwelling nocturnal species mostly restricted to the western palearctic. Most of their 25 genera contain less than a dozen species or are even monotypic. The genera *Dysdera* (~290 spp) and *Harpactea* (~200 spp) make up the bulk of the family diversity (80%). While the high species richness in *Dysdera* may reflect the unique trophic specialization within the group (i.e. oniscophagy), *Harpactea* has been traditionally considered a dumping ground for unnoticeable, small size dysderids. Here, we investigate the limits of *Harpactea* based on the results of a target gene phylogenetic analysis of an exhaustive taxonomic sample within Dysderidae and related families, with a special focus on the subfamily Harpacteinae. We confirm *Harpactea* polyphyly, which further compromise the limits of other genera within the subfamily. Our results warrant a major taxonomic revision of the group as an unavoidable step towards the full comprehension of the role of abiotic and biological factors in shaping diversity across the tree of life.

Oral presentation.

DISCOVERY AND GENETIC CHARACTERIZATION OF A NOVEL SOCIAL SYSTEM: MALE AGGREGATIONS, SINGLE COHORT COLONIES, AND POSSIBLE LEKKING IN A MALAGASY KITE SPIDER

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Spiders are notoriously solitary and cannibalistic, with instances of colonial or social lifestyles in only about 50-60, or ~0.1% of 50,000 described species. Population analyses indicate that most colonies consist of multiple cohorts formed by close relatives. Territorial social spiders facultatively form colonies by interlinking individual webs, but further cooperation is infrequent, and only among juveniles or (rarely) females. In spiders therefore, aggregations of males outside of the male-male competition context has been unknown. Here, we report on a discovery of a kite spider from Madagascar that exhibits unique colonies. We found colonies of the newly described araneid Isoxya manangona n. sp. formed by up to 41 interconnected, single-cohort adult female webs with up to 38 adult males aggregating on a central, single, non-sticky line. With males resting tightly together, we found no evidence for male-male aggression. Genetic analyses from RAD sequencing suggest that most colonies consist of unrelated individuals. Furthermore, genetic variability of males was somewhat less than that of females. Single cohort colonies made up purely of adults, and peaceful male aggregations, have not previously been observed in spiders. Although direct behavioral observations are preliminary, we speculate based on the available evidence that these colonies may represent a novel and first case of lekking in spiders.

Oral presentation.

DESCRIBING SPIDER SPECIES FOR TROPICAL REGIONS IN REASONABLE TIMES USING DIVERSITY INVENTORIES (ARANEAE: ARANEOMORPHAE)

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Araneomorphae species documentation and new species descriptions for diversity inventories in tropical ecosystems represent a challenge considering the high number of collected taxa (200-300 species per hectare), the high percentage of new species found, the large proportion of taxonomic groups without revisionary work, and the logistic problems for importing or exporting biological materials. In recent years, our laboratory has developed a working setup to overcome these challenges applied to three diversity inventories with almost 50% of new taxa. Central to this setup is the online documentation of approximately 700 Araneomorphae species with 9,000 high-resolution images, with the logic that it is easier to move information than specimens (www.unamfcaracnolab.com). Furthermore, sharing these images with colleagues has expedited the identification of new species, which combined with the resources of the Spider World Catalog have enormously facilitated the description of new species for taxonomically revised taxa. However, the description of many of these new species is problematic because they belong to groups in taxonomic disarray and could make synonyms if described. This talk presents how to document online the large number of species commonly found in tropical ecosystems, how to describe the majority of them in reasonable times (2 to 3 years) and discusses how to find a compromise between taxonomic nomenclature stability and the urgent documentation of biodiversity.

Oral presentation.

SICARIIDAE DO ESTADO DA BAHIA (ARANEAE; ARACHNIDA) COM FOCO NO GÊNERO *Loxosceles*

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A pesquisa teve como objetivo identificar as espécies de aranhas da família Sicariidae nos diversos municípios do estado da Bahia, caracterizando-as nas suas diferentes fitofisionomias, com foco no gênero *Loxosceles* (de importância médica). Utilizou-se os dados das coleções científicas do Museu de História Natural da Bahia (MHNBA/UFBA), Coleção de Arachnida das Coleções Taxonômicas da UFMG (UFMG) e Laboratório Especial de Coleções Zoológicas da Divisão de Desenvolvimento Científico do Instituto Butantan, acervos representativos da fauna araneológica do país que cobrem um espaço temporal de mais de 38 anos. Resultados demonstraram a ocorrência de 13 espécies de sicariideos na Bahia, dos gêneros *Loxosceles*: *L. amazonica; L. cardosoi; L. carinhanha; L. chapadensis; L. karstica; L. similis; L. troglobia* (n=7) e *Sicarius*: *S. cariri; S. diadorim; S. jequitinhonha; S. ornatus; S. saci; S. tropicus* (n=6). Essas espécies representam 17% das conhecidas para o Brasil e somam 11 registros a mais para a Bahia em relação às últimas publicações de 2009. As espécies estão registradas em 52 municípios, majoritariamente no Bioma Caatinga, em fitofisionomia Savana-Estépica, possivelmente inter-relacionadas às características ambientais como vegetação xerófila e terrenos de origem sedimentar. Registros inesperados de *Sicarius* para a Mata Atlântica possibilitam novas abordagens em estudos posteriores. Foi evidenciada a presença de espécies em localidades de afluxo turístico (Lençóis, Mucugê, Ituaçu e Iraquara) e em ambiente urbano, ambos passíveis de oferecer risco de acidentes à população humana. Este relatório traz o primeiro registro da distribuição regional da diversidade de espécies da família.

Oral presentation.

CRITERIA, CHALLENGES, AND FUTURE OF PERUVIAN OPILIONES FOR KEY BIODIVERSITY AREAS (KBAs) ASSESSMENT

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Key Biodiversity Areas are the most important places in the World for species and their habitats and contribute to the global persistence of biodiversity. In Peru, there are 166 KBAs, which are currently undergoing a re-evaluation process. For this reason, a group of Peruvian researchers was convened to gather information on focal groups of flora and fauna. For Opiliones, the following was done: 1) List of Peruvian species; 2) estimation of the species extinction risk according to IUCN criteria, both global and regional; 3) selection of potential triggering species of KBAs based on endemism and distribution range; 4) species assessment according to KBA parameters, paying attention to those recorded in pre-existing KBAs and protected areas; 5) comparison of the distribution of the selected Opiliones species with that of other taxa and 6) proposal of a new KBA or additional support for an existing one. The results show 183 species of harvestmen recorded for Peru. None of these species are included in the IUCN red list of threatened species, and only one species, *Tingomaria hydrophila* Mello-Leitão 1949, is included in the Peruvian red list (classified as critically endangered). As part of the first assessment of Peruvian harvestmen in this process, there are more than 10 pre-existing KBA and four new proposed areas under revision. Perspectives of the KBA criteria and suggestions are discussed to improve the quality of data in publications for future studies in Opiliones and, thus, enhance results for future assessments and, finally, design better strategies for species diversity conservation.

Oral presentation.

SEXUAL CONFLICT AND DIFFERENTIAL BREEDING SEASON LENGTH

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One area of sexual conflict research that is currently limited are investigations into the abiotic factors which promote the evolution of sexual conflict. Reproductive seasonality (i.e. grouping of reproductive events during a specific time of the year due to environmental constraints) may represent one such factor promoting the evolution of sexual conflict through limitation of the time available to find willing mates and/or resources necessary for reproduction. Leiobunine harvesters (Opiliones) display a geographical bias in sexual conflict across different species. Coercive traits and strategies only occur in species from northern latitudes, while species in locations identified as tropical retain traits associated with solicitous breeding. With solicitous mating having been identified as the ancestral trait, multiple independent transitions to the coercive suite of traits have occurred. This demonstrates a geographic trend in sexual conflict in harvesters. A shortened breeding season in temperate regions may explain this bias. Because temperate regions vary in breeding season length, we are now evaluating population-level variation in reproductive traits in *Leiobunum vittatum*, *L. aldrichi*, *L. flavum*, and *L. calcar*, with the expectation that populations in more seasonal environments will show more exaggerated armaments. Decreased time available to find a mate and/or resources in regions of increased seasonality may thus be a significant driver in the evolution of sexual conflict.

Oral presentation.

OPILIONES DEL VALLE DEL CAUCA, COLOMBIA: UNA APROXIMACIÓN TAXONÓMICA Y FUNCIONAL A SU DIVERSIDAD

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Los opiliones han sido uno de los grupos de arácnidos menos estudiados en Colombia, pese a tener gran potencial para estudios de conservación, biogeografía y evolución. Este trabajo evaluó la diversidad taxonómica (nueve localidades) y funcional (cuatro localidades) de opiliones del Valle del Cauca en un rango altitudinal de 0 a 3700 msnm empleando captura manual nocturna y revisión de hojarasca. En total, se recolectaron 1483 ejemplares, agrupados en 13 familias y 136 morfoespecies y se realizaron 2322 medidas de nueve rasgos morfológicos. Cerca del 90% de las morfoespecies encontradas corresponden a nuevas especies para la ciencia. La mayor riqueza taxonómica fue encontrada en la localidad Parque El Duende (2300-3100 msnm) con 74 morfoespecies, convirtiéndose en el sitio con la mayor diversidad de opiliones hasta la fecha a nivel mundial. Por otro lado, Isla Palma (0 msnm) presentó la segunda mayor riqueza con 35 morfoespecies. En contraste, las riquezas más bajas se presentaron en los relictos de bosque seco tropical (cinco a ocho morfoespecies, 1000-1100 msnm) y en páramo (cinco morfoespecies, 3700msnm). Los resultados sugieren un patrón altitudinal bimodal para la diversidad taxonómica de opiliones en la zona de estudio. Se encontraron diferencias significativas entre la riqueza funcional de los fragmentos de bosque seco y el páramo con respecto a los bosques de niebla, reflejando correlación entre la diversidad taxonómica y funcional. Esta investigación evidencia la gran diversidad de opiliones en la región y define las bases para estudios futuros que permitan entender procesos causales ecológicos y evolutivos.

Oral presentation.

DETERMINANTS OF SPERM ALLOCATION IN MALES OF *Allocosa senex* (LYCOSIDAE), A SPECIES WITH HIGH REPRODUCTIVE INVESTMENT

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Allocosa senex males make a high reproductive investment by building burrows to attract sexual partners, copulate inside them, and, after copulation, donate their burrows to females. Females will lay their egg sac here, setting a context of low re-copulation chances with surrounding males. The male investment could result in a trade-off with other determinants of reproductive success, such as ejaculate allocation. We aimed to determine the amount of sperm production and sperm transferred by males, the amount stored by females after copulation, and their relationship to morphological, life history, and behavioral traits during copulation. We performed sexual encounters between virgin pairs (n=20) and recorded their morphological, life history, and behavioral traits. We counted sperm stored in the bulbs and in the spermathecae of the individuals used and added control counts in virgin males. *A. senex* males showed a low but constant amount of sperm in the bulbs, regardless of their reproductive status. Interestingly, the amount of sperm they transferred was proportionally low, whereas females stored almost all of the transferred sperm. The females' age and body shake number positively affected the amount of sperm remaining in the bulbs ($\chi2=9.4890$; $p=0.002$, $\chi2=5.389$; $p=0.020$, respectively), while the age of males affected it negatively ($\chi2=131.277$; $p<0.005$). These results could be a trade-off consequence of the male precopulatory investment, but also linked to a low risk of sperm competition scenario. These results will be discussed in the framework of postcopulatory sexual selection and aging, comparing ejaculate allocation patterns with other spider species.

Oral presentation.

DIVERSITY AND BIOGEOGRAPHY OF NEW ZEALAND'S CYPHOPHTHALMI

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New Zealand is a compelling system for biogeographic study, providing opportunities to test hypotheses at a variety of spatial and temporal scales. The archipelago originated as part of the southern supercontinent Gondwana, and eventually rifted from Australia approximately 80 mya. Subsequently, the landscape of New Zealand has been altered by dramatic geological and climatological change, including drastic marine transgression during the Oligocene, the uplift of the Southern Alps during the Neogene, and Pleistocene glaciation. All of these processes have left their signature on the New Zealand biota, and what better system to study the biogeographic legacy of these episodes than terrestrial animals that have witnessed them all? Cyphophthalmi, also known as mite harvesters, are a suborder of Opiliones with small body sizes, highly conserved morphology, and extreme dispersal limitation. These animals are found in leaf litter habitats throughout New Zealand, and previous work has demonstrated that their presence in the archipelago is best explained by Gondwanan vicariance. Currently, we are working to update our understanding of the species-level diversity and present-day distribution of these animals within New Zealand, and to test hypotheses about their biogeographic history. We present results of recent work on species delimitation, phylogenetic analysis, and species distribution modeling.

Oral presentation.

PHYLOGENOMICS AND BIOGEOGRAPHY OF THE AUSTRALIAN TARANTULAS (ARANEAE, THERAPHOSIDAE)

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Tarantulas (Theraphosidae) are amongst the most widespread and diverse mygalomorph spiders in the world; however, the Australian fauna's biogeography and systematics are largely unresolved. Sanger sequence data reveals many undescribed species but with limited markers and phylogenetic signal, it does not provide a robust and well supported phylogeny. As such, these problems limit further research on their systematics or biogeographic origins. In this study we aim to address this by widespread sampling across Australia and next-generation sequencing, specifically by using transcriptome sequencing. By combining transcriptomes of the Australian fauna with previously published Theraphosidae transcriptomes, we test the following hypotheses: 1) The Australian tarantulas are nested within the Selenocosmiinae, and 2) Tarantulas dispersed into Australia less than 25 million years ago. Preliminary results indicate the Australian fauna are most closely related to the Asian Selenocosmiinae. Based on the estimated crown age of the Australian taxa, they have only recently dispersed into Australia from Asia.

Oral presentation.

METHOD FOR IDENTIFICATION OF O-GLYCOSYLATION IN ARACHNID PREY CAPTURE PROTEINS

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The late Edward K. Tillinghast was responsible for a series of critical manuscripts that characterized the post-translational glycans of what would later become known as aggregate spidroins– the massive proteins responsible for conferring hygroscopic adhesion to orb- and cobwebs. Tillinghast and others used gas-liquid phase chromatography to identify a host of carbohydrate molecules contributing to these webs, but the most striking inclusion within the silk were the high levels of N-acetylgalactosamine (GalNAc), an amino sugar derivative of galactose notable for its role in forming the antigen on type-A blood. GalNAc monosaccharides are *O*-linked to serine or threonine residues, initiating the glycoprotein branches characteristic of mucins. However, these *O*-glycans cannot be enzymatically cleaved from the protein. We have created a workflow to assess *O*-glycosylation of arthropod bioadhesives, modeled on the well-characterized fetal blood plasma protein fetuin-A. Briefly, our method requires preparation of two aliquots of protein– one deglycosylated and subsequently trypsin-digested, and one digested only. We compare the peak intensity spectra of variably-collided proteins to identify *O*-linked GalNAc on bioadhesives with known sequence. Currently, we are investigating *O*-glycosylation frequency in the aggregate spidroins of bolas, garden, and widow spider. We are also studying the chemistry of the glandular setal secretions of the Opiliones genus *Sabacon,* which uses the glue exuded from the pedipalps for prey capture. We will investigate the potential for plasticity of this post-translational modification under shifting habitat conditions in the future.

Oral presentation.

SPIDER DIVERSITY AND ECOLOGY IN DIFFERENT ENVIRONMENTS IN A HILL SYSTEM OF PAMPA BIOME

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Environmental complexity can drive spider diversity and guilds distribution among different environments in the landscape. The aim of this study was to describe and compare the spider communities of hillside forests (HF), riparian forests (RF) and natural grasslands (G) of a hills system of southeastern Uruguay, and to evaluate the influence of environmental complexity of these communities. Samplings were carried out in 100 m transects using pit-fall traps, G-Vac aspirator and manual collection. We also measured environmental variables at each collecting site. Spider abundance and species richness was higher in G, followed by HF and RF. Environments were different in terms of their specific composition, but with a certain degree of overlap (ANOSIM, R = 0.3874; p = 0.0001). In HF, foliage runners (FR) abundances were positively correlated with mulch depth, space-weavers (SpW) with canopy density, sheet-weavers (ShW) with canopy density and plant cover, and ground hunters (GH) with plant cover. In RF, orbicular-weavers (OW) were positively correlated with canopy density and plant richness; while SpW, ShW and GH with plant cover. In G, abundances of FR and GH were positively correlated with plant richness, while ambushes (A) and SpW with mulch depth. Our results bring new knowledge about spider communities in native forests and natural grasslands of the Pampa biome, which highlight the influence of the environmental variables in the structure. This study constitutes a potential tool to the management, assessment and conservation of these natural environments. Financial support PAIE (CSIC, UdelaR).

Oral presentation.

UNDERSTANDING THE CONFIGURATION OF THE CHELICERAL TEETH ACROSS MARRONOID SPIDERS USING DIFFERENT MORPHOLOGICAL CHARACTER CODING STRATEGIES

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The complete understanding of phylogeny implies the explanatory power of homologies and homoplasies. The way in which observable features are coded is aimed at maximizing the explanatory power of the data and reducing the number of additional "steps". Under the logic of homology, the implication of primary characters sometimes favors the appearance of subordinate characters that can be inapplicable when the primary character is absent. These "sub-characters" can be re-coded into a staggered matrix using nested dependencies, and instead be interpreted as plesiomorphic. Alternatively, the subordinate characters can be re-coded into dependent characters and reinterpreted as neomorphic under a topological equivalence criterion. The coding of spider chelicerae dentition is an excellent model to test different character re-coding strategies. Other authors have shown that coding only the number of teeth (regardless of the homology of each tooth) is 'highly incongruent with the phylogenetic tree', and the characters could be more informative if analyzed independently. Here, 1) we test different strategies for coding characters and the resulting phylogenetic signal informativeness under both parsimony and maximum likelihood criteria, and 2) map characters using an integrative approach (morphology+UCEs) in the marronoid clade. Our results support that separating the teeth into serially homologous structures under a topological equivalence criterion results in a more informative dataset and minimizes the occurrence of inapplicable characters. Finally, our results suggest that re-coding an excessive number of plesiomorphic states in a staggered matrix could result in incongruent or misleading phylogenetic signals.

Oral presentation.

HABITAT USE AMONG TROPICAL RAINFOREST SOLITARY AND GROUP LIVING SPIDERS WITH DIFFERENT WEB ARCHITECTURES (JATUN SACHA, NAPO, ECUADOR)

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Habitat heterogeneity in the tropical rainforest allows a great diversity of spider species to coexist without interference among them. This suggests some kind of spatial separation exists to prevent competition. This study seeks to test whether spider webs with different architectures, in species that live solitarily or in groups utilize their habitat differentially. For this purpose, we obtained spider web, spider, microhabitat, and activity data. We compared them across web type categories separated by web architecture and sociality level. The purpose was to assess the factors that may influence the spider webs and how each spider builds their web to fulfill their requirements. Complex tridimensional webs, used for habitation, were more likely to be under vegetation cover and closer to the ground than simpler two-dimensional webs, used solely to capture prey. The latter were located higher from the ground, in open areas where prey interception probability was higher. Microhabitat preference may influence their exposure to environmental conditions, predation risk and amount of nutrients received. The likely costlier tridimensional web types were maintained functional longer; whereas species with simpler web architecture rebuilt their webs periodically. Group living is likely to reduce the cost of constructing a web. Group living species had bigger and more complex webs to capture bigger and more abundant prey.

Oral presentation.

AWAKEN BEAUTIES: MATING QUIESCENCE IN ARACHNID FEMALES

Cargnelutti, Franco[1,2]; Bollatti, Fedra[1,2]; Izquierdo, Matias A.[1,2]; Abregú, Debora[2]; Oviedo-Diego, Mariela[1,2]; Vrech, David E.[1,2]; Olivero, Paola[1,3]; Calbacho-Rosa, Lucia[1,2]; Simian, Catalina[1,2]; Palen-Pietri, Rocio[1,2]; Mattoni, Camilo I.[1,2] & Peretti, Alfredo V.[1,2].

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Although strongly criticized during the 90s, male bias is still common in sexual selection studies. Arachnids are not an exception, with most studies ignoring female behavior or even reporting that it is lacking during mating interactions. An example is the female paralysis or quiescence that occurs during or immediately following copulation in some species of spiders and other arachnids. In this review, we compile hypotheses regarding the selective advantages of female quiescence and the published information on female quiescence in all orders of Arachnida, and show that it mainly occurs in Araneae, Scorpiones, and Solifugae. We then propose a new terminology and evaluate evidence that male behavior triggers female quiescence, in particular in relation to mate choice or communication during copulation (both of which imply an active female role). We also evaluate whether the hypotheses formulated for some groups can be applied to others and suggest possible contexts that may have favored female quiescence in arachnids. We encourage new researchers to report and describe this female behavior in more detail.

Oral presentation.

WITHIN-SPECIES DIVERSIFICATION OF MALE GENITALIA? A CASE STUDY WITH A MALE-DIMORPHIC HARVESTMAN

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Males of internally fertilizing species need to overcome several challenges to achieve reproductive success, such as outcompeting sperm from rival males and inducing female cooperation to bias fertilization. The ability to overcome these challenges in often associated with male genital morphology, which is under intense sexual selection. The importance of sexual selection in promoting diversification of genital morphology *between* species is known for numerous taxa. However, in species with male dimorphism, the intensity and direction of sexual selection acting on characters of each morph usually differ. Therefore, we asked whether sexual selection can also promote *within-species* diversification in male genitalia. We studied male genital morphology in the male-dimorphic harvestman *Poecilaemula lavarrei* using linear measurements and a geometric morphometric approach. We measured the length of the truncus and glans. Both traits showed negative allometry, as expected in genital structures. Although both traits were larger in majors, the allometric slopes did not differ between morphs. We also measured the area of the microsetae mat on the ventral side of the ventral plate. The total area of this mat was larger in majors, but its relative area did not differ between morphs. Finally, we analyzed the ventral plate shape defining landmarks and semilandmarks both in the dorsal and ventral sides of this structure. Preliminary results show little difference in genital shape between morphs. Our findings show that genital morphology of the morphs differs only in size, suggesting that post-copulatory sexual selection does not promote within-species diversification in the shape of male genitalia.

Oral presentation.

TAXONOMY AND SYSTEMATICS OF THE 'BACKOBOURKIINE' SPIDERS, A NEW AUSTRALIAN SUBFAMILY OF ORB-WEAVERS (ARANEAE, ARANEIDAE)

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The orb-weaving spider family Araneidae includes medium-sized to large spiders. A recent molecular study showed a paraphyletic 'Araneinae', indicating the existence of new clades, including the Australian 'backobourkiine' spiders, with most of its species misplaced in *Araneus* Clerck, 1757 and *Eriophora* Simon, 1864. We revised most of the backobourkiine genera: *Novakiella* Court & Forster, 1993 (two species), *Backobourkia* Framenau, Dupérré, Blackledge & Vink, 2010 (four species), *Lariniophora* Framenau, 2011 (one species), *Plebs* Joseph & Framenau, 2012 (22 species), *Hortophora* Framenau & Castanheira, 2021 (13 species), *Socca* Framenau, Castanheira & Vink, 2022 (12 species), *Salsa* Framenau & Castanheira, 2022 (seven species) and *Leviana* Framenau & Kuntner, 2022 (five species). Now, the following other 'backobourkiines' are being revised: *Acroaspis* Karsch, 1878 (eight to ten species), *Carepalxis* L. Koch, 1872 (around 11 Australian; in addition to two Papuan and three Neotropical species), and *Parawixia dehaani* (Doleschall, 1859), which is widespread from northern Australia into Asia, also representing a new genus. Future generic treatments include the Australian *Araneus arenaceus*-group (with at around four species), and the circumscription of a new monotypic genus based on '*Araneus' necopinus* (Keyserling, 1887), which was placed basal in the Araneidae outside the 'backobourkiines'. We will also conduct phylogenetic works based on morphological and molecular data to test generic hypotheses clarifying dubious relationships. The molecular analyses will have a UCE probe set component that targets more than 2,000 loci specific to spiders, allowing us to use Museum specimens with degraded DNA. This phylogenetic study aims to establish the new subfamily Backobourkiinae.

Oral presentation.

DIVERSIDAD DE LA COMUNIDAD DE ARAÑAS DE LA FAMILIA ARANEIDAE DE LA ESTACIÓN DE BIODIVERSIDAD TIPUTINI, AMAZONÍA, ECUADOR

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Las arañas tejedoras de telas orbiculares (familia Araneidae) del Ecuador son poco conocidas. La información disponible proviene casi exclusivamente de las revisiones realizadas por Herbert W. Levi y colaboradores, que pese a ser monumentales se basaron en colecciones geográficamente poco representativas a nivel de Ecuador. En el año 2014 empezamos un programa de inventario y monitoreo de la comunidad deAraneidae de la Estación de Biodiversidad Tiputini, estación científica de 600 hectáreas manejada por la Universidad San Francisco de Quito en la Reserva de la Biósfera Yasuní, Amazonía norte del Ecuador. Hemos inventariado la comunidad de arañas durante seis años, en períodos de muestreo de entre 12 y 19 días entre los meses de mayo y junio, con un esfuerzo de muestreo acumulado hasta el momento de 1090 horas-persona. Los muestreos se realizaron en transectos recorridos durante la mañana, tarde y noche buscando arañas entre 0–3 m de altura sobre el suelo. Adicionalmente, muestreamos de manera oportunista la copa de los árboles a 45 m de altura sobre el suelo accediendo a través de una torre de dosel. Hasta el momento hemos identificado una alta riqueza de especies, incluyendo los primeros registros para el país de 12 especies de los géneros *Acacesia*, *Alpaida*, *Enacrosoma*, *Kaira*, *Mangora*, *Metazygia*, *Parawixia* y *Wagneriana*, junto con al menos tres especies nuevas de los géneros *Acanthepeira*, *Mangora* y *Taczanowskia*. La curva de acumulación de especies muestra una tasa decreciente.

Oral presentation.

TESTING FOR SEX-DIFFERENCES AND CONSIDERING THE PHYLOGENETIC CONTEXT FOR OPSIN EXPRESSION PATTERNS IN WIDOW SPIDERS

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Understanding the molecular foundation of the diverse visual ecologies of spiders lags behind other animal systems. Here we assess whether the expression of proteins involved in vision and photoreception (opsins) changes with life history in widow spiders (genus *Latrodectus*), anchoring our observations in a phylogenetic context. Last-instar juveniles (penultimates) are sedentary sit-and-wait predators, relying on web vibrations for survival. Adult females retain this lifestyle whereas adult males leave their webs to search for females. Thus, we hypothesized that a functional increase in photoreception would be beneficial for males but not females across development. We tested for sex differences in opsin expression patterns in the redback spider *Latrodectus hasselti*. We carried out de novo transcriptome assembly of total RNA extracted from the cephalothorax of final-instar juveniles, adult females and adult males. Using differential expression analyses, we identified opsin genes expressed more in penultimate instars compared to adults in males and females. Opsins identified in *L. hasselti* were compared to published arthropod opsin gene data. We identified three non-visual opsins and three clades of visual opsins, KO1, KO2 and KO3 in *L. hasselti*. Of the six opsins in the repertoire, only KO1 and KO2 transcripts had significant expression in *Latrodectus* transcriptome assemblies. We found that opsin expression tended to be male biased overall, with C-opsin expression stronger in penultimate compared to adult males. Conversely, female opsin expression did not change across maturity, as predicted. We discuss these results in light of the known function of these opsins in other spiders.

Oral presentation.

MEXICAN SCORPIONS, CHECKLIST AND DISTRITUBION OF SPECIES A HISTORICAL REVIEW

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Scorpions are one of the most important groups within Arachnida, mainly due to its long evolutive history and its venom, but the distributional range of many species is yet to know. The highest concentration of scorpion species in the world is in Mexico, with more than 300 described species. The first one was described almost 200 years ago from Mexico City. Mexico presents a complex geography, most of the northern half presents of different types of deserts, which triggers an adaptative response on many species; thus, it is notorious that much of the work done in the country is mainly focused in xeric areas. On the other hand, the southern half is dominated by tropical areas with higher level of humidity; although it has been explored, there is a great difference in the comparison to the northern half. The combination of different environments presents an interchange of species, genera and even families along a relatively small area and is one of the main reasons that Mexico has many monotypical genera. In this work, we summarized all reported localities on literature and from two of the main collections for scorpions in the country (Colección Nacional de Arácnidos, UNAM and Centro de Estudios de Zoología, U de G) for all the described species, that provides a landscape for the diversity of scorpions in the country and the areas where field work should be focused to get a better understanding of the scorpions fauna.

Oral presentation.

BIOGEOGRAPHY OF *Karaops* (ARANEAE: SELENOPIDAE) FLATTIE SPIDERS IN AUSTRALIA

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We used molecular data to examine the phylogenetic and biogeographic history of the recently-described Australian flattie spider genus *Karaops*. We compare our results to previous studies of vertebrates and plants to look for congruencies, novelties in phylogenetic and biogeographic patterns as well as centres of species richness and centres of endemism. Phylogenetic results indicate that the genes used in our analysis do not provide resolution at the base of the tree, although lineages within species groups are partially resolved. A similarity with previous studies is that sister taxa are distributed in the east and the west of the continent with no close relatives found in the intervening geographic region. This pattern is thought to be due to aridification. However, unlike results from previous studies, our dataset does not indicate that basal lineages are from wetter rather than dryer areas. The Kimberley, Pilbara and Central Desert are centres of endemism as shown in several previous studies; however, Southwestern Australia does not appear to be a hotspot of endemism for *Karaops*. This study provides a first step toward improving our understanding of the phylogenetics and biogeography of this widespread invertebrate taxon as well as adding to a growing body of data that can inform regionalisation and conservation decisions.

Oral presentation.

SYSTEMATIC REVISIONS OF COSMETID HARVESTMEN (OPILIONES: LANIATORES: COSMETIDAE) IN THE CARIBBEAN ISLANDS

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With more than 6,650 species described worldwide, Opiliones (daddy longlegs or harvestmen) represent the third largest order of arachnids. Endemic to the Neotropics, the family Cosmetidae contains more than 700 species of harvestmen. Although it is the second largest family of harvestmen, an antiquated classification system and the lack of a family-wide systematic study have made it difficult for researchers to study these animals. Using morphological and molecular data, we evaluated the relationships of Cosmetidae in several Caribbean islands (e.g., Puerto Rico, Cuba, Jamaica) to better understand their evolutionary relationships. We identify new characteristics that can be used to organize them into genera. In our molecular phylogenetic analysis, we recovered two distinct clades (genera) that occur in Puerto Rico. We describe a new genus that includes three species; of those, we describe one new species and redescribe another that was previously included in *Paecilaema*. Additionally, in Cuba, species belonging to several different genera were recovered as a monophyletic group. This work enables us to propose several systematic revisions of island lineages. We examine the morphological characters that are useful in diagnosing cosmetid genera and discuss the importance of an integrative approach to taxonomic studies within this family.

Oral presentation.

COMPARATIVE ANALYSIS OF THE SCORPION BRAIN USING MICRO-CT

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Morphological characters analyzed in phylogenetic studies of scorpions are almost entirely based on external structures. Although scorpion internal anatomy was reported to be phylogenetically informative more than 160 years ago, its relevance was neglected after the mid-1920s. Only recently have studies revisited scorpion internal morphology, confirming its phylogenetic significance. The earliest works addressing the scorpion nervous system come from the first half of the twentieth century and little research has been conducted since. Thus, the current state of knowledge stems from only a few taxa, lacks comparative examinations and includes questionable interpretations of observed patterns. Generally, the scorpion central nervous system includes four major components: the subesophageal ganglion, a pair of circumesophageal commissures, seven free ganglia (three mesosmal and four metasomal) and the brain. The brain, or supraesophageal ganglionic mass, is situated directly underneath the ocelli and gives rise to the ocellar, cheliceral, rostral, tegumentary and stomatogastric nerves. The pedipalpal, pedal and mesosomal nerves arise from the subesophageal ganglion but have uncertain destinations. In this project, we optimize preservation techniques and scanning parameters to visualize the scorpion brain using MicroCT scanning and aim to determine whether structural differences can be observed across families. Specimens from five scorpion clades were euthanized, fixed, dehydrated in a graded ethanol series, stained and critically point dried. MicroCT scanning was performed using a Yxlon FF20 CT scanner. Preliminary results indicate no major structural differences across taxa, suggesting the morphology of the scorpion central nervous system is relatively conserved.

Oral presentation.

A NEW VISION OF EQUITY AND DECOLONIZATION IN ARACHNOLOGY

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Scientific research, in particular taxonomic research, has been inextricably linked with the rise of colonialism and European expansion. Western science was historically conducted as an extractive process, and sought to define not only the practice of natural history research but also who was included in that practice. In the centuries since, this legacy has persisted, with resources related to biodiversity research and data largely concentrated in North America and Europe (the Global North), while species-rich areas are concentrated in the Global South with inequitable access to specimens, literature, and data. As the focus of scientific research has evolved through time, a "publish or perish" model has emerged that furthers these resource biases and devalues the kinds of scientific research needed to overcome the global biodiversity crisis. In this re-envisioning of the field of arachnology, we identify ways of transforming the practice of monography into a more integrative and collaborative practice that more equitably serves scientists and community members in the Global South. We investigate not only who engages in the process of biodiversity research, but who that research serves. In addition, we present a novel metric for assessing past taxonomic effort, and we suggest this metric as an objective way to identify high-priority taxa and zoogeographic regions for species discovery, and highlight the benefits of maintaining open-access taxonomic databases—a necessary step in overcoming bias to further document the world's biodiversity.

Oral presentation.

RUN TO THE HILLS: PHYLOGENY OF THE NEOTROPICAL HIGH-ALTITUDE TARANTULAS *Hapalotremus* (ARANEAE: THERAPHOSIDAE)

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The genus *Hapalotremus* includes 14 species of medium-sized tarantulas distributed in Argentina, Bolivia and Peru and most of its species are found at high altitude environments along the Andes. These spiders inhabits mainly Puna mountainous grasslands and high cloud forests, but they can be observed in extreme environments, where permanent altitude glaciers are common. Because most of the diversity of this genus has been described in the last five years, more species are expected to be discovered in the short time, and thus an hypothesis of the phylogenetic relationships of the species is crucial for future discoveries. The present study is aimed at the cladistics analysis of all known *Hapalotremus* species including as well a new species from Urcos, Peru and also provides discussions on its relationships with other close related genera. The outgroups included representatives of *Catumiri*, *Bistriopelma*, *Bumba* and *Antikuna*. Our preliminary results were based on parsimony analyses of a matrix with 21 terminal taxa scored for 69 morphological characters that suggested *Hapalotremus* as monophyletic, with most of its component species emerging in two main clades. *Hapalotremus apasanka* was found to be the most basal species among the genus, and *H. hananqheswa*, *H. major* and *H. kaderkai* as sister species of the remaining clades. *Hapalotremus* sp. nov. was found close to *H. vilcanota* supported by the white ventral abdomen and apical projections of spermathecae well-developed and laterally projected. From the phylogeny obtained, *Antikuna* was found to be the sister genus of *Hapalotremus* supported by four synapomorphies.

Oral presentation.

PHYLOGENOMICS ANALYSIS OF *Idiops* PERTY, 1833 AND IDIOPINAE SIMON, 1889, BASED IN ULTRACONSERVED ELEMENTS (UCE): FIRST RESULTS

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Among the Mygalomorphae spiders, Idiopidae is the second most diverse family, comprising exclusively trapdoor spiders, divided in three subfamilies: Arbanitinae, Genysinae, and Idiopinae. Mainly characterized by having the anterior lateral eyes projected in front of the others, the subfamily Idiopinae currently comprises 148 species, distributed in seven genera: the type-genus *Idiops*, composed of 96 valid species, plus *Ctenolophus*, *Galeosoma*, *Gorgyrela*, *Heligmomerus*, *Segregara* and *Titanidiops*. Based on datasets composed of fresh and museum samples, we present the results of the first phylogenomic analysis based on Ultraconserved Elements (UCEs) which for the first time included species of *Idiops* from South America and Africa, representatives of all genera of Idiopinae, except *Galeosoma*, in addition to *Neocteniza*, an enigmatic genus of Genysinae. We generated phylogenetic trees (PHYLUCE software, Spider2kv1 probe-set, Maximum Likelihood analyses) that aimed to test the monophyly of the genus *Idiops*, and the monophyly and intrarelationships of Idiopinae. According to our results, the neotropical species of *Idiops* form a monophyletic clade distinct from the African species, which are more closely related to other African genera. In all analyses, the subfamily Idiopinae appeared as monophyletic and more phylogenetically related to *Cteniza* (Ctenizidae) than to *Neocteniza* (Idiopidae). Due to the position of *Neocteniza*, which for the first time is included in a molecular phylogeny, Idiopidae is now considered a paraphyletic taxon. The results found for Idiopinae are morphologically supported mainly by the arrangement of the eyes. The division of *Idiops* into two clades is supported by the distinct dentition patterns of the chelicerae.

Oral presentation.

EXPRESSION AND FUNCTION OF RETINAL DETERMINATION NETWORK HOMOLOGS IN THE HARVESTMAN *Phalangium opilio*

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The visual system of chelicerates is composed of median and lateral eyes, whose arrangement and morphology vary greatly across and within chelicerate orders. For instance, spiders (Araneae) mostly have both types of eyes, whereas extant harvestmen (Opiliones) have only a single pair of eyes. In Phalangida harvestmen, those are unambiguously median eyes (lateral eyes missing), whereas in mite harvestmen (Cyphophthalmi) the identity of the eyes as either median or lateral is still under debate. While the genetic patterning of eyes is well understood in insects, with specific reference to retinal determination network (RDN) genes, the genetic basis behind variation in median and lateral eyes across arachnids is unknown. Here, we investigated eye patterning in the harvestman *Phalangium opilio* (Opiliones, Phalangida) to understand the patterning of its median eye pair, as well as to search for clues of the mechanism behind lateral eye loss. Using colorimetric and HCR in situ hybridization, we describe the expression of the RDN genes *sine oculis*, *eyes absent*, *dachshund*, *Optix*, and *Pax6* paralogs, and characterize opsin expression in the eyes. We show that knockdown of *eyes absent* via RNA interference results in a spectrum of defects affecting all eyes. Our study of the gene network of *P. opilio* eyes provides a much-needed point of comparison with respect to data in spiders, allowing polarization of the evolutionary changes in RDG genes in chelicerates, as well as shedding new light into the fate of lateral eyes in the Phalangida harvestmen.

Oral presentation.

FROM FAUNISTICS TO SYSTEMATICS: DIVERSITY OF LINYPHIID SPIDERS IN TEMPERATE AND TROPICAL FORESTS OF MEXICO (ARANEAE: ARANEOIDEA)

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With over 4,700 described species and 625 genera, Linyphiidae is the most diverse lineage of web-building spiders. Although linyphiids have a worldwide distribution they are most diverse in temperate and colder regions, especially at higher latitudes where they dominate local spider assemblages. In the tropics, these spiders also tend to be diverse, but there they represent a smaller fraction of the spider diversity. Knowledge on tropical linyphiids is still scarce with slow progress of alpha taxonomic work in the last 30 years. Linyphiidae is also a taxonomically challenging family, 38% of the genera are monotypic and many taxa are ambiguously defined, are known only from the original descriptions or under a variety of genus and species names. In Mexico, 86 species grouped in 22 genera have been recorded, which represent 1.9% of the world fauna. In the last decade, faunistic work has been responsible for much of the total increment of species number. For Mexico, these studies have contributed to the knowledge of spider diversity, although their species identification average is only 52%. The present work aimed to describe linyphiid species from Mexico following a faunistic approach. Twenty-four species collected from four spider inventories conducted in oak and tropical forests in Eastern Mexico were documented, identified, and described. Furthermore, to infer their phylogenetic relationships and their position within Linyphiidae we will analyze morphological data in combination with nucleotide sequences from five markers and will add them to global samples of previous studies.

Oral presentation.

WEBS OF INTRIGUE: MUSEUM GENOMICS ELUCIDATE RELATIONSHIPS OF THE MARRONOID CLADE (ARANEAE)

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The advent of molecular systematics has revealed uncertainties along the backbone of the spider tree of life. Particularly, it has revealed shared evolutionary history among families united only through molecular data and not through any other line of evidence (e.g., morphological), including the marronoid clade, a clade recently proposed based on molecular evidence and morphologically united only in being small, brown, obscure spiders. Despite the uncertainty of relationships of families in this clade to each other as well as the synapomorphies that may define the clade, these spiders run the gamut of life history strategies, with some species social, and some aquatic in a variety of freshwater and saltwater environments. Beyond this, the internal relationships of families in this clade are also unclear. We use an exemplar approach with 90 representatives from ten ingroup families to extract UCE loci *in silico* from 41 low-coverage whole genomes, as well as additional genomic data from the GenBank Sequence Read Archive. This resulted in a matrix of 516 loci with 50% of taxa represented by each gene which were used to infer a phylogeny of lineages currently believed to be a part of the marronoid clade to evaluate the family level relationships as well as support for the clade in IQ-TREE2. Additionally, we examined results when combined with specimens for which there is only Sanger sequencing data. We combine these molecular phylogenetic results with morphological scoring to identify putative morphological characteristics that underlie these evolutionary relationships, propose synapomorphies, and propose taxonomic resolutions based on this phylogeny.

Oral presentation.

ADVERTISEMENT PREDICTS MALE SUCCESS IN ACQUIRING NEW CLUTCHES IN A NEOTROPICAL ARACHNID WITH EXCLUSIVE PATERNAL CARE

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According to the "essential male care" hypothesis, when paternal care does not conflict with mate acquisition, males should allocate available resources not only to offspring care, but also to advertisement of their quality to acquire further mates. This hypothesis has never been tested, and our main goal is to fill this gap using the harvestman *Iporangaia pustulosa* as a study model. Males of this species care for the eggs and have a sexually dimorphic pair of glands that deposit chemical signals around the oviposition site. We created four experimental groups with caring males: good condition with glands not blocked; good condition with glands blocked; poor condition with glands not blocked; and poor condition with glands blocked. Then, we recorded the males that received new clutches in the next 30 days. Our results indicate that males in good condition and with non-blocked glands have a higher chance of acquiring new clutches when compared with males in other experimental groups. These results support the "essential male care" hypothesis, according to which the advertisement would always be a reliable indicator of male care and quality.

Oral presentation.

SPIDERS OF GALAPAGOS: HABITATS AND SPECIES COMPOSITION

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The Galapagos Archipelago is a highly diverse territory with a wide variety of native and endemic species thanks to its geographical isolation, geological singularity, and relative youth. The islands possess a unique ecosystem distribution. Spiders are a particularly important group for this analysis due to their colonizing behaviors and their ease to be introduced and adapt to new territories. However, information about spider species composition in the Galapagos based on their habitats is rather limited. In this study, we show the new reports of arachnids found in our most recent expedition to San Cristóbal Island, with a particular focus on the family Araneidae. We sampled six different habitats by manual collection of the specimens (total sampled: 130 specimens, 12 species, 22 morphospecies). We found significant levels of endemism (42.85%) on the island, with 63.63% of the species total shared with the mainland. The distribution of certain native species is possibly limited to the distinctive habitats and conditions of San Cristóbal. We seek to highlight the importance of keeping science up to date, with a multidisciplinary approach that encompasses various interactions that may affect the composition of species in complex ecosystems such as the Galapagos Islands.

Oral presentation.

O COMÉRCIO ILEGAL DE ARACNÍDEOS NA BAHIA, BRASIL (2020)

Guimarães França, Esther Verena; Lira-da-Silva, Rejâne Maria & Kobler Brazil, Tania.

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O comércio ilegal (tráfico) de animais silvestres põe em risco o equilíbrio do meio ambiente e a saúde. O Brasil é megabiodiverso e importante centro do mercado ilegal de animais silvestres; nossa Constituição Federal (1988) reconhece o meio ambiente como direito fundamental, protegido pela Lei 9.605/98, que prevê que o tráfico de animais silvestres é crime. O Núcleo de Ofiologia e Animais Peçonhentos da Bahia (NOAP/UFBA) (SISFAUNA/IBAMA, nº.1886409/CTF, nº.23227; SisGen/MMA C2A1B0 e C547E30) está habilitado para receber serpentes e aracnídeos apreendidos na Bahia. Objetivamos analisar o comércio ilegal de aracnídeos através da parceria entre o NOAP/UFBA, Grupamento Especial de Proteção Ambiental da Guarda Municipal de Salvador/Bahia e Polícia Federal, nas operações de apreensão em 2020. Recebemos 35 aracnídeos, 34 da fauna nativa (97,2%) e 1 exótica (2,8%, *Grammostola pulchripes*); a maioria Aranhas caranguejeiras (n=31; 88,6%): *Avicularia avicularia Ephebopus murinus, G.pulchripes, Pachistopelma* sp, *Sicarius* sp e Fam. Nemesiidae, das quais 27 chegaram vivas (87,1%), 4 mortas (12,9%) e 18 (58,1%) morreram após a entrada no NOAP/UFBA; atualmente temos 9 vivas (41,9%). Recebemos 4 escorpiões vivos (*Jaguagir agamemnon*) que sobreviveram até 782 dias; 2 fêmeas pariram, mas nenhum filhote ou adulto sobreviveu. O número alto de animais que chegam mortos ou que morrem logo após a entrada alerta para as precárias condições do tráfico. A maioria dos animais (n=21; 60,0%) entregues eram filhotes/juvenis, sugerindo preferência devido à facilidade de transporte e burla à fiscalização até o destino. Cabe à sociedade e ao Poder Público a responsabilidade de combater o tráfico de animais.

Oral presentation.

SMALL AND LARGE SPATIAL SCALE DRIVERS OF SPIDER DIVERSITIES IN SUB-ARCTIC PEAT BOGS

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Peat bog habitats cover around 3% of terrestrial lands. They harbor specialized biodiversity and provide several important ecosystem services. Facing many human induced degradations on top of climate changes, peat bogs present high conservation value. To achieve proper conservation policies in such specific habitats it appears crucial to have a precise understanding of the drivers of peat bog's diversity. To that end, specialized indicator of peat bogs conservation states must be defined. In front of the predominance of vegetation as a model study in conservation, the highly diverse taxon of spiders appears as a perfect bioindicator. Indeed, their known complementarity to vegetation as a model taxa and their high number of specialized peat bog species fits conservations needs. Furthermore, in varying landscapes where defining an ecosystem state is a challenge, a multiplicity of complementary diversity facets and metrics can provide powerful tools for conservation. The aim of this study is to assess how spider taxonomic and functional diversities will unfold within a variety of comparable boreal ombrotrophic peat bogs and highlight the links between peat bogs environmental specificities and a good conservation status. Sampling took place in the French archipelago of Saint-Pierre and Miquelon (on the East coast of Canada) during summer 2021 using pitfall traps. Relationships between environmental drivers and taxonomic diversity were investigated using variance partitioning, while the influence of selected factors on particular functional traits was studied using Community Weighted Matrix analysis.

Oral presentation.

THE PSEUDOSCORPION FAMILY HYIDAE – NEW PHYLOGENETIC DATA AND A REMARKABLE SUBTERRANEAN RADIATION IN THE AUSTRALIAN DESERT

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The pseudoscorpion family Hyidae comprises just two genera: *Hya* is distributed throughout south-east Asia and Sri Lanka, and *Indohya* occurs in western India, Madagascar and north-western Australia. Their susceptibility to desiccation rules out long-distance dispersal, with the modern distribution being the result of Mesozoic vicariance. A multi-gene phylogenetic analysis and rigorous morphological assessment reveals that *Hya* includes cryptic species in south-east Asia and a highly diverse epigean and subterranean *Indohya* fauna in Western Australia. The epigean species tend to be widely distributed in shaded gullies and vine thickets. Despite comprehensive collecting in subterranean ecosystems, many *Indohya* are short-range endemic species restricted to single locations, many of which are likely to be impacted by mining activities. The subterranean radiation in the arid Pilbara region of Australia is more closely related to the Cape Range fauna than to the epigean Pilbara radiation, suggesting different periods of radiation and speciation.

Oral presentation.

CHASING THE WANDERER: PHYLOGENOMICS REVEALS INCOMPLETE CONVERGENT MORPHOLOGICAL EVOLUTION ASSOCIATED TO HABITAT SHIFTS IN TROPICAL WANDERING SPIDERS (ARANEAE, CTENIDAE)

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The independent evolution of similar traits is an interesting pattern across the tree of life. These convergent morphologies can evolve through numerous pathways, which leads to questions about what extent species exhibit complete convergence. Wandering spiders (Ctenidae) are a diverse group that is distributed worldwide, with over 500 species described so far. Although most ctenids are restricted to forests, they present a great diversity of morphotypes that specialized to different kinds of habitats (ground, low vegetation and arboreal). Herein, we present the first and most extensive phylogenetic sampling of Ctenidae using genome scale data. Furthermore, we infer a dated molecular phylogeny for character mapping and morphospace analyses, to address the effect of habitat shifts on ecomorphological adaptations. Ctenidae and its main lineages originated during the Paleocene–Eocene and have diversified in the tropics since then. The ancestral reconstruction of the habitat suggests that ancestral ctenids were arboreal, and colonized the ground independently at least four times. In addition, there were three independent events of colonization from the ground to low vegetation. Phylomorphospace analyses indicated a clear morphological separation between arboreal and ground species, and low vegetation species occupying an intermediate morphospace between the two other habitat types. Using Ornstein-Uhlenbeck stabilizing selection models we were able to detect that morphological shifts in the phylogeny correlate with habitat transitions, but these analyses also suggest that different morphological types originated from repeated habitat transitions. Thus, the evolutionary shifts to different habitats has promoted the diversification of ctenids, resulting in layers of morphologically convergent forms.

Oral presentation.

PHYLOGENY OF *Phidippus* (ARANEAE, SALTICIDAE) USING ULTRACONSERVED ELEMENTS: RE-ASSESSING MORPHOLOGICAL SPECIES GROUPS

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The genus *Phidippus* has more than 60 described species, including some of the largest jumping spiders in the world, which can reach up to 20mm in length. The genus is distributed in the American continent, from Alaska to Costa Rica. Until now, only one publication presents the phylogenetic relationships between the different *Phidippus* species, and it is based on morphological characters. To corroborate this morphological phylogeny, and to study the evolution and biogeography of the genus, we obtain a molecular phylogeny of *Phidippus* species. The aim here was to obtain the first phylogeny of *Phidippus*, analyzing Ultraconserved Elements (UCEs) by Maximum Likelihood, a technique widely used for resolving complex phylogenetic relationships between species. We captured UCEs of 52 *Phidippus* species and present here a molecular phylogeny which provides an insight into possible re-organizations of some of the previously-established species groups within *Phidippus*.

Oral presentation.

KARSTIFICATION AS A MAJOR TRIGGER FOR DIVERSIFICATION IN PSEUDOSCORPIONS IN DINARIC KARST

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Western Balkans's Dinaric Karst is one of the major biodiversity hotspots, containing a plethora of endemic taxa in both surface and subterranean habitats. Pseudoscorpions are one of the most abundant and diverse invertebrate lineages in both environs, but evolutionary processes leading to high diversification rates remain unknown. Moreover, the present state of their taxonomy is highly problematic because type specimens are either lost or deposited in private collections, thereby slowing down, or even completely preventing taxonomic work. We examined 2208 specimens collected from 435 localities in the Dinaric Karst and generated molecular data including two gene fragments: mitochondrial *COI* for 499 specimens, and nuclear *28S* for 96 divergent haplotypes within the megadiverse families Chthoniidae and Neobisiidae to reveal patterns of genetic diversity; construct the first evolutionary trees of Croatian pseudoscorpions; and test the monophyly of endemic species and genera described from the Dinaric Karst. Several species delimitation methods were used to examine concordance between sequence clustering and traditional taxonomy. Preliminary data indicate incipient speciation supported with low optimal thresholds (OTs), overlooked cryptic diversity and the presence of undescribed species, while occurrence in karstic microhabitats promotes speciation and endemism in families Chthoniidae and Neobisiidae, but not in Chernetidae that appears less speciose than the former. Our study forms the baseline for in-depth taxonomic studies that focus on biogeography and evolutionary patterning for taxa from the Dinaric Karst.

Oral presentation.

RICHNESS AND COMPOSITION OF MYGALOMORPH SPIDERS FROM THE ATLANTIC FOREST, SOUTH AMERICA

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A biodiversity hotspot, the Atlantic Forest (AF) covers 7.5% of South America (92% Brazil, 6% Paraguay, 2% Argentina), its area now restricted to 10–28%. It spans over latitudinal, longitudinal, altitudinal (0–2.900 m) and soil-climatic gradients (1.000–4.200mm; 13–25°C, annual rainfall; temperature). The AF is subject to humid tropical and subtropical climates. In this study, was performed an inventory of mygalomorphs spiders based on taxonomic articles, material examined from several Arachnological collections and collected specimens, mainly by the project Morphological and molecular systematics and biogeography of mygalomorph spiders of Atlantic Forest (Fapesp 17/11985-9). A total of 321 species distributed into 51 genera and 12 families were compiled. From these, 207 are nominal species, 114 not described and 156 endemic to AF. The most richness family was Pycnothelidae with 121 species, 65 not described, 66 endemic, followed by Theraphosidae with 97 species, 16 not described, 42 endemic; Barychelidae 24 species, 18 endemic; Actinopodidae 24 species, nine endemic; Idiopidae 19, eight, three; Dipluridae 23, five, 14; Microstigmatidae five, one endemic; Halonoproctidae three; Rhytidicolidae two, one, one; Euagridae, Ischnothelidae, Mecicobothriidae with one species each, the last with one endemic. The most richness genera were *Stenoterommata* (42 spp.), *Rachias* (19 spp.), *Pycnothele* (13) in Pycnothelidae; *Actinopus* (24) in Actinopodidae; *Tmesiphantes* (13), *Vitalius* (10), *Hommoeomma* (seven) in

Theraphosidae. These data show that the much remains to be done and that with more collections directed towards mygalomorph spiders, this number will be even greater, mainly in a heterogeneous environment as Atlantic Forest.

Oral presentation.

3D RECONSTRUCTION REVEALS A LONG COPULATORY ORGAN AND LONG SPERM STORAGE ORGAN IN A PHOLCID SPIDER WITH ONE-PALP INSERTION

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The spiders of the subfamily Ninetinae (Pholcidae) possess characteristics that make them unique. Unlike other species in the family, they are tiny, short-legged spiders that inhabit arid areas of the Americas, Africa, and the Arabian Peninsula. They are the only ones within the family with a synspermia-type sperm transfer system and form the sister group to the rest of the Pholcidae. Beyond ecological data from labels and field observations, the biology of this group is entirely unknown. Here, we present the first data on the reproductive biology of *Gertschiola neuquena*, a Ninetinae from South America, and analyze the copulatory mechanics to detail the interaction between genital structures. The precopulatory courtship of this species follows the general pattern of the family, but the use of the first pair of legs of the male to grasp the female by the abdomen stands out. During copulation, the male uses only one palp, leaving the other outside, constituting a notable difference from the rest of the family. On the other hand, the genitalia of the female present a "blind sac" type spermatheca, tubular in shape, very long and convoluted. Data on copulatory mechanics reveal that the male's procursus is inserted into the spermatheca during copulation, while the embolus reaches only the first section of it. The relevance of these data to functional theories of sexual selection is discussed.

Oral presentation.

"LOVE BITES" IN SPARASSIDAE BERTKAU 1872 — MORE USUAL THAN THOUGHT?

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There are only few direct observations of male fang use during coercive mating of huntsman spiders. Indirect evidences are scars, e.g., in *May* Jäger & Krehenwinkel 2005 or *Thunberga* Jäger 2020. From their position, distance and their nature these scars are supposed to be caused by male spiders with their fangs when clinging to the female. When preparing a manuscript with 100 new species of the genus *Pseudopoda* Jäger 2000, more such cases became evident. A survey through published records and the collection of the Senckenberg Research Institute was conducted. Results are shown and discussed as well as an outlook for other families is given.

Oral presentation.

MISTAKEN SYNAPOMORPHY: THE EVOLUTIONARY DEVELOPMENTAL ORIGINS OF THE PATELLA

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The patella is the leg segment that confers a "double-bend" architecture to the pedipalps and walking legs of Euchelicerata (arachnids and horseshoe crabs). It was postulated that the patella was a synapomorphy of Arachnida and resulted from neofunctionalization of a new copy of the gene *dachshund* (*dachshund-2*). Two aspects of this reconstruction are difficult to reconcile across the literature. First, not all arachnid orders have patellae (e.g., Solifugae, Pseudoscorpiones, some acariform mites). Second, *dachshund-2* is restricted to a subset of six arachnid orders (Arachnopulmonata); various arachnid groups outside of the arachnopulmonates possess a true patella, but not *dachshund-2* (e.g., Opiliones), suggesting that *dachshund-2* is not the developmental causal gene underlying the patella. Thus, neither the developmental genetic basis for patellar formation, nor when the patella evolved, are clearly understood. Here, we show that a novel expression domain of the gene *extradenticle* is associated with the patellar segment in embryos of the harvestman *Phalangium opilio*. Gene silencing of *extradenticle* results in the loss of the patella, suggesting that this transcription factor underlies the origin of the patellar segment. We tested whether this novel *extradenticle* expression domain was regulated by the Notch-Delta signaling cascade, which is responsible for leg segmentation. Knockdown of *Notch* resulted in unsegmented appendages, in addition to loss of the median *extradenticle* domain. Having discovered the gene that makes the patella, we explored the expression of *extradenticle* homologs across Chelicerata. We show that groups lacking patellae have lost the median *extradenticle* domain.

Oral presentation.

RAFT SPIDERS OF MADAGASCAR: INTEGRATIVE TAXONOMY OF *Dolomedes*

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Genital morphology is usually key to diagnose spider species. When this classical taxonomic criterion fails in closely-related species, however, taxonomy requires additional tools for assessing species boundaries. Madagascar is currently known to harbor a single species of raft spider (*Dolomedes kalanoro*), but our fieldwork yielded at least four additional *Dolomedes* species. A clear-cut morphological diagnosis of these species proved to be difficult due to several specimens possessing intervening characteristics. We here report on an integrative taxonomic approach to solve the Madagascar *Dolomedes* problem, combining classical spider diagnostics with morphometrics, phylogenetic species delimitation, and spiders' habitat preferences. We will discuss the relative strengths and weaknesses of these lines of evidence in isolation and in combination, and outline the strength of integrative taxonomy. By increasing the known raft spider diversity from one to five, our results directly contribute to the understanding of Madagascar's biodiversity.

Oral presentation.

FRONTIERS IN ARACHNID SCIENCE: SEVEN GRAND CHALLENGES IN OUR FIELD

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Frontiers in Arachnid Science is a new open access electronic journal aiming to become the main scientific forum for publishing high quality research bearing on arachnids and their chelicerate cousins. It will advance the basic knowledge on arachnid biology and their roles in ecosystems, strive to better understand and preserve their genetic, phenotypic, ecological, and functional diversity, and move towards applications of arachnid evolutionary novelties. Given the enormous diversity of arachnids, their ubiquity in most ecosystems, the recent developments in biological sciences, and the biodiversity declines in the era of habitat destruction and global climate changes, seven grand challenges in the field of arachnid science are identified: 1. Grasp the arachnid species diversity; 2. Standardize arachnid systematics research; 3. Interpret arachnid trait evolution through omics approaches; 4. Facilitate biotechnological applications of arachnid molecules and biomaterials; 5. Utilize arachnids as models in ecological and biogeographic research; 6. Disentangle evolutionary drivers of arachnid diversity; and 7. Define effective conservation measures for arachnids in the light of global changes.

Oral presentation.

EFFECTS OF LANDSCAPE STRUCTURE IN ARACHNIDS' ASSEMBLAGES OF FOUR DIFFERENT BRAZILIAN BIOMES

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Landscape structure has been constantly changed by human activities, and such changes are expected to affect biodiversity at different spatial and temporal levels. In this study, we evaluated how arachnid (scorpions, pseudoscorpions, and harvestmen) assemblages respond to anthropogenic land use in four Brazilian ecosystems: Atlantic Forest, Amazon Forest, Cerrado, and Caatinga. The specimens were collected over three years (2019-2022) in 120 sites of

primary forest (n = 30 per ecosystem). Using GIS data for land use distribution, landscape metrics related to the spatial coverage of primary vegetation, monoculture, and urban settlements were calculated within a spatial buffer of 300 m in radius. A total of 1,843 scorpions (*s* = 27), 361 pseudoscorpions (*s* = 37), and 1,782 harvestmen (*s* = 124) were collected. Both taxa responded to the variation in the landscape metrics although these responses differed between the taxonomic groups and ecosystems. A reduction in forest cover was associated with a decrease in species richness in harvestmen and scorpions in the Amazon Forest. Similarly, monocultures and urban settlements had a negative impact on both scorpion and pseudoscorpion richness in Caatinga and Cerrado. Monocultures and urban settlements also affected species composition and turnover in three taxonomic groups, and this response was consistent across the four ecosystems - the species turnover was characterized by the replacement of specialist species by habitat-generalist ones. Our results indicate a complex response of arachnid groups to human-induced changes in landscape structure with an overall negative effect of land use on the biodiversity of these invertebrates.

Oral presentation.

GENE EXPRESSION IN REGENERATING SPINNERETS OF *Grammostola actaeon* (POCOCK, 1903) (ARANEAE: THERAPHOSIDAE)

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Regeneration is the ability to replace or restore body parts lost or amputated due to an accident or predation. In spiders, if the spinneret is damaged or removed due to an injury from a predator or during a difficult molting process the spinneret will regenerate, as occurs in the other appendages located in the prosome (legs, palps, labrum, and chelicerae). Although regeneration is very well studied in some groups, spinneret regeneration offers a fascinating research opportunity to address some unanswered questions in regenerative biology. For example, a key question in regeneration studies is understanding whether the process of regeneration mirrors embryonic development. In this unprecedented study for spiders, we address this question and investigate links with the evolutionary origin of spinnerets. We generated and compared transcriptional dynamics of spinnerets regeneration for four different post-amputation stages, plus a control group and gene expression analysis by RNAseq. These four regeneration phases include: i. Blastema activation (three days after amputation), which occurs right after wound healing and when the epidermis separates from the cuticle and continues to spread outwards incorporating new blastema precursor cells from the remnant spinneret tissue; ii. Complete blastema (five days after the amputation); iii. Regenerating limb segments and folds (seven days after amputation) corresponding to the regenerating limb as it folds back in the remaining piece of the spinneret, and continues to grow and redifferentiate and, iv. Complete regeneration (ten days after amputation), when new muscles and the segmentation of the new spinneret is completed. The expression levels of the regenerating spinnerets are compared to similar age-controlled non-damaged spinnerets, revealing genes and genetic pathways involved in regeneration. Financial support: CNPq (NLMH #142192/2017-1, Brazil), FAPESP (NLMH #2017/19616-2 and #2019/12282-7, Brazil), CAPES (NLMH #PROAP-AUXPE and PROAP/PNPD-2015 - #817757/38860-IB, #817757/2015).

Oral presentation.

NUEVO REGISTRO DE *Tyrannochelifer floridanus* (ARACHNIDA: PSEUDOSCORPIONES) EN EL BOSQUE DE PINO-ENCINO EN ZACAPOAXTLA, PUEBLA, MÉXICO

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El orden Pseudoscorpiones (Geer, 1778) comprende mundialmente 4056 especies (53 fósiles), agrupadas en 473 géneros (16 fósiles) y de acuerdo con el catálogo de Harvey actualizado a 2020, se registran 27 familias (una fósil). La familia Cheliferidae (Risso, 1827) ocupa el cuarto lugar en diversidad con 64 géneros y 308 especies. México cuenta con gran heterogeneidad ambiental, siendo uno de los factores que propicia la especiación y biodiversidad; por ello, como objetivo se planteó comprobar la presencia de queliféridos en el bosque templado con predominio de *Pinus patula*. Se realizaron colectas directas durante el verano de 2019, en corteza de árboles, buscando en el fuste, a altura del pecho, obteniendo un total de 226 ejemplares, entre ellos ninfas, hembras y machos, predominando adultos en etapa reproductiva. Posteriormente en laboratorio, entre marzo y julio de 2022, se trabajó en el estudio de los especímenes colectados, identificando a la especie *Tyrannochelifer floridanus* (Banks, 1891), reportando por primera vez su presencia en México, con tendencia a ser una nueva especie. Su distribución coincide con la documentada para República Dominicana y Florida, US., pues se ubica al límite inferior de la región biogeográfica Neártica, por ello, es necesario realizar una descripción morfológica completa y ser pioneros de su genoma en el banco de genes mundial. Como perspectivas se propone llevar a cabo la reproducción de la especie para conocer su ciclo biológico y un programa de divulgación científica para fomentar el conocimiento, conservación de la misma y de su hábitat.

Oral presentation.

CLIMATE RELICTS: ASIAN SCORPION FAMILY PSEUDOCHACTIDAE SURVIVED MIOCENE ARIDIFICATION IN CAVES OF THE ANNAMITE MOUNTAINS

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Southeast Asia is a hotspot of karst systems in the tropics and many relictual taxa have been documented in caves across the region. The ancient, relictual scorpion family Pseudochactidae Gromov, 1998 has a disjunct distribution and includes two hypogean subfamilies from caves in the Khammouan-Phong Nha-Kẻ Bàng Karst in the northern Annamite (Trường Sơn) Mountains of Laos and Vietnam and one epigean subfamily from Central Asia. A recent revision identified six species in the family, however, how these taxa dispersed and diversified into Southeast Asian cave systems has not been tested. In the present contribution, the phylogeny of Pseudochactidae is reconstructed using three mitochondrial and three nuclear markers and 140 morphological characters, divergence time and ancestral range estimation analyses are conducted, and the evolution of troglomorphic characters is investigated. Results confirm a previous hypothesis that Pseudochactidae originated in Eurasia, most likely near the Tajik block in the Carboniferous, supporting the 'Out of Eurasia' hypothesis. Pseudochactidae dispersed across Southeast Asia after collision of the Cimmerian continent and Indochina with Eurasia in the Late Jurassic. Colonization of Southeast Asian caves began in the Late Cretaceous and was completed by the Miocene. The onset of aridification in Southeast Asia during the Late Miocene resulted in the extinction of epigean Pseudochactidae, whereas hypogean members of the family likely survived within caves in the limestone massifs of the Annamite Mountains, supporting the 'Climate Relict' hypothesis. This study contradicts results from previous analyses on the biogeography of scorpions and other arachnids in Southeast Asia and helps better our understanding of biodiversity in this complex region.

Oral presentation.

SPIDER FAUNA OF THE TROPICAL MONTANE CLOUD FORESTS (TMCFS) OF THE WESTERN GHATS BIODIVERSITY HOTSPOT IN INDIA

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A study was conducted on the spider fauna of the high-altitude temperate montane could forests (TMCFs) in the Western Ghats on India. The Western Ghats, one of the 35 global biodiversity hotspots, is a 1600-km long forested mountain chain running across the western peninsular India that harbours a unique sky-island formed of the tropical montane cloud forests (TMCFs) or the shola-grassland mosaic ecosystem. In the current study, aerial hand collection, ground hand collection, pitfall traps and beating were used as the sampling techniques. The total number of individuals of spiders sampled during the study period was 1947 (excluding immature species), comprising 208 species from 100 genera and 31 families. One genus and thirty- three species were recognised as new to science. Salticidae was the most species-rich and genus-rich family, and *Cheiracanthium*, the most species-rich genus. The abundance and distribution pattern of spiders indicated that lower montane cloud forests (LMCFs) have higher abundance than the upper montane cloud forests (UMCFs). Comparative analysis between LMCFs and UMCFs indicated significant differences in the community structure and species composition of spiders. Thirty-nine species belonging to 21 genera from 12 families were also identified to be endemic to the TMCFs of the Western Ghats.

Oral presentation.

SYSTEMATICS AND BIOGEOGRAPHY OF *Paravulsor* (XENOCTENIDAE): AN ENDEMIC GENUS FROM THE BRAZILIAN ATLANTIC FOREST

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Spiders are a hyperdiverse and abundant group that is insufficiently know taxonomically and needs to be better studied. This knowledge deficit is particularly problematic regarding endangered ecosystems, as many species can go extinct before they have been described. In the master's dissertation of the first author, the recently proposed family Xenoctenidae was revised at genus-level classification. During this study, we discovered that the hitherto monotypic genus *Paravulsor* comprises many undescribed species. These species are endemic to the Brazilian Atlantic Forest (BAF), one of the world's most biodiverse and threatened ecosystems. In the current study, we examined *Paravulsor* species from scientific collections and field work expeditions, resulting in 50 undescribed species in 62 localities throughout the BAF. Using Geographical Interpolation of Endemism – GIE, we infer areas of endemism for this genus. The distribution of these species seems corroborated with endemism areas already known to the BAF (Northeast, Southeast, "Serra do Mar region", " and South). Based on Ultra Conservated Elements (UCE's) we propose a molecular phylogeny that will be used to infer the biogeographical history of *Paravulsor*. Thus, because of its distribution and endemism in one of the world's hotspots of biodiversity, *Paravulsor* has excellent potential for biogeographical and conservation studies. This work will help us to understand the BAF biota and increase our knowledge about the Xenoctenidae species in Brazil.

Oral presentation.

REVISIÓN SISTEMÁTICA DEL GÉNERO *Josa* KEYSERLING, 1891 (ARANEAE: ANYPHAENIDAE)

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Con más de 600 especies descritas en 57 géneros, las arañas de la familia Anyphaenidae, comúnmente denominadas "arañas fantasma", representan un componente relevante de la diversidad en el clado Dionycha. Entre las dos subfamilias que integran al grupo, Amaurobioidinae ha sido tradicionalmente estudiada de manera progresiva en el contexto filogenético bajo diferentes líneas de evidencia (morfología, datos moleculares). La mayor diversidad de amaurobioidinas ocurre en bosques Andino Patagónicos del cono sur, donde varios géneros son endémicos, aunque otros linajes han colonizado los ambientes abiertos, áreas subtropicales y tropicales de Sudamérica, incluyendo a los géneros *Arachosia* O. Pickard-Cambridge, 1882 y *Josa* Keyserling, 1891. *Josa* es actualmente conocido por 15 especies distribuidas desde Colombia hasta Argentina, con dos especies en América Central. Aunque su monofilia ha sido fuertemente soportada por caracteres morfológicos y moleculares —es el grupo hermano de las demás Amaurobioidinae—, su taxonomía no ha sido revisada y la mayoría de las especies se conocen solo a partir de sus descripciones originales. El género es extremadamente diverso a lo largo de su distribución y bien representado en colecciones biológicas, siendo un modelo interesante para estudios biogeográficos y filoclimáticos. Por lo anterior, es imperativo resolver de manera previa los impedimentos taxonómicos evidentes en el género para reconocer su diversidad y delimitar de manera no ambigua las especies. En este trabajo se presentan los resultados iniciales de una revisión sistemática del género *Josa*, con el reconocimiento de al menos 30 nuevas especies para Sudamérica.

Oral presentation.

A SPINY PROBLEM: ITERATIVE TAXONOMIC REVIEW AND SPECIES DELIMITATION IN THE *Micrathena triangularispinosa* SPECIES GROUP (ARANEAE: ARANEIDAE)

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Micrathena, a charismatic spider genus, is a model for a variety of evolutionary biology studies. Its 117 species are recognizable by their remarkable abdominal spines and notable sexual dimorphism. The genus was revised by Levi in 1985, but some of its species groups remain problematic. The *triangularispinosa* group contains 13 species with polymorphic morphology and wide distributions, and its specimens often cannot be reliably identified, hampering evolutionary and biogeographic studies. To revise the taxonomy of the *triangularispinosa* species group, we gathered more than 2000 samples from taxonomic collections and extensive field expeditions covering the entire distribution of the group from Costa Rica to Argentina. We sorted those specimens into 34 morphospecies based on somatic and genitalic morphology. Ten of those morphotypes are new, undescribed species; three names will be revalidated; one recently described species will be synonymized; and the remaining morphotypes are geographically structured variations within nominal valid species. Some of those morphospecies have been confirmed by COI sequences and will be further refined by an expansion of this dataset. Most of the undescribed species are restricted to the Andes (N=5), and western Lowland Amazon (N=4), indicating high diversification rate of the genus in those regions. We find some species endemic to the dry diagonal and the Atlantic Forest in Brazil, the Colombian Chocó, and the eastern Lowland Amazon. Our results indicate that even though Levi's revisions are the pavement for the development of Neotropical Araneidae taxonomy, we should take some of his taxonomic proposals with a grain of salt.

Oral presentation.

STRIKING DIVERSITY AND STARTLING RANGES OF SPIDERS (ARANEAE) FOUND IN TUNDRA ZONE IN NORTHEASTERN SIBERIA

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There is a general pattern of biodiversity: the number of species in all groups of animals reduces with reduce of heat supply in the Arctic and Subarctic. Our studies in the Kolyma River mouth part located in the tundra zone 68º–69º revealed amazingly high species diversity of Gnaphosidae, Philodromidae and Salticidae compared to other places in the taiga and tundra zones and located on the same latitude. For 32 species, Kolyma River lower reaches is the northernmost known locality. Several species have extensive ranges and occur from the tundra zone (69ºN) to the southernmost edge of the Palaearctic south to 28ºN. Possible reasons of high diversity will be discussed.

Oral presentation.

DAZZLING, DIVERSE DICTYNIDAE: A MOLECULAR PHYLOGENY OF A TAILOR'S DRAWER SPIDER FAMILY

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The family Dictynidae is a spider family composed mostly of small, brown spiders that are distributed worldwide. Dictynidae has been labeled a "tailor's drawer" family because it contains taxonomically unorganized and often evolutionarily distant species. With adaptations that allow dictynids to thrive in habitats ranging from the frozen Arctic to Death Valley, one of the hottest places on Earth, and from hypersaline alkali sinks to freshwater ecosystems, there is remarkable diversity found in the family. However, without the context of a phylogeny, we cannot begin to study the extreme adaptations found in this group. Furthermore, previous molecular studies using target-gene molecular data recovered several genera that are currently classified as dictynids outside of the dictynid clade, and the clade generally had low branch support values for internal relationships. Other hypotheses of dictynid relationships have relied solely on morphological data and utilized synapomorphies that are often variable within a genus or even in a single species. The genera comprising the family, and the relationships among those genera, have never been rigorously tested using modern phylogenetic methods or genomic-scale data. Using exemplar dictynid species from most currently recognized dictynid genera, and UCEs recovered *in silico* from low coverage whole-genome sequencing, we have resolved the phylogenetic placement and relationships of genera within the family Dictynidae. This study begins to remedy the dearth of systematic knowledge about this incredibly diverse spider group and fills knowledge gaps in the tree of life for little brown spiders.

Oral presentation.

PHYLOGENY AND EVOLUTION OF FORAGING BEHAVIOR IN NURSERY WEB SPIDERS (ARANEAE, PISAURIDAE)

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Pisauridae is a diverse family of lycosoid spiders whose monophyly has been recently called into question. The group has no known morphological synapomorphies, and despite being known for their nursery webs, very similar structures are made by *Peucetia* (Oxyopidae) and *Ancylometes* (Ctenidae). Additionally, pisaurids employ a unique variety of foraging behaviors, with some species primarily wandering and others web-building. Although hypotheses have been proposed about the evolution of foraging characters, no consensus has been reached. This study builds on previous Sanger phylogenetic studies by providing a larger taxon sampling to test the monophyly of Pisauridae and its phylogenetic structure. To increase taxon sampling and number of markers currently available in GenBank, we assembled raw files of UCE and transcriptome data from NCBI using SPAdes and extracted the following eight markers traditionally used in Sanger studies: 12S, 16S, 18S, 28S, histone H3, actin, NADH and COI. We analyzed these data using parsimony and maximum likelihood methods to reconstruct the evolutionary relationships of the family. We used the resulting optimal topologies to reconstruct the evolution of the foraging behavior of pisaurids and to test the hypothesis of the nursery web as a family synapomorphy. We discuss some of the putative morphological synapomorphies of the main pisaurid lineages and the biogeographic patterns within the phylogenetic framework offered by the molecular phylogenetic results of the study.

Oral presentation.

WHEN A GLIMPSE IS ENOUGH: AN EXPLORATION OF PARTIAL MIMICRY OF JUMPING SPIDERS USING NEURAL NETWORKS

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Many flies and moths mimic the frontal appearance of jumping spiders. This type of mimicry, which we term as Partial mimicry, can be distinguished from Batesian mimicry since the mimic has spider resembling patterns only in certain parts of the body. The presence of spider like patterns appear obvious only when viewed from certain directions suggesting that the mimic is frequently targeted by its predators from particular angles. To test this evolutionary hypothesis, we explored this system by training a Deep Convolutional Neural Network (DCNN) to distinguish the frontal features of jumping spiders (large principal eyes, small lateral eyes and outstretched legs). Then we tested it on images of jumping spider mimicking flies and moths. We find that the neural network was more likely to misidentify mimicking flies and moths as jumping spiders, but that this varied according to the species tested. We further tested the network taking into consideration the visual acuity of potential predators on images of flies taken at different angles. Our results could suggest that partial mimicry may be a result of the combined effect of the signalling angle and orientation of the mimics in combination with the likelihood that predators may depend on cognitive shortcuts to identify insects as prey. Further experiments incorporating the properties of the visual system of predators (such as vision in ultraviolet) would result in a better understanding of the evolution of partial mimicry.

Oral presentation.

WHAT IS BEHIND THE PLUG: DETERMINANTS OF AN INTER-SEXUAL MATING PLUG IN A SCORPION

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Males evolved strategies to reduce sperm competition, like mating plugs that block female genitalia and hinder remating. Both sexes might participate in plug formation so that sexual interests could determine its efficacy. In scorpions, the determinants of plug efficacy have not yet been studied. We analyzed whether the body condition or courtship behaviors could impact plug traits in *Urophonius achalensis* (Bothriuridae). This species has an inter-sexual plug formed by portions of spermatophore and hardening by female immune response triggering. We recorded matings (n=16) to quantify courtship behaviors: female resistance, male gland rubbing, and sexual sting. We then photographed the plug (visible externally) every three days (for one month) to analyze size increment and darkening (linked to hardening) with an image analysis software. We related plug traits to sexes' body condition (residual index) and their courtship behaviors using GLMs in R. We found that higher-condition males transferred larger plugs, and higher-condition females had hardened plugs (stronger immune response). Longer female resistance during courtship was related to less hardened plugs, while longer male sexual sting to the female was linked to hardened plugs. Female resistance could signal partial rejection of certain males, which, related to less-hardened plugs (less efficacy), could facilitate female remating. These results show that multiple factors influence plug traits suggesting interest-dependent post-copulatory mechanisms of both sexes. Our findings offer new avenues to study cryptic female choice through the modulation of the immune response in an original study model contributing significantly to this area of sexual selection.

Oral presentation.

DANGEROUS ATTRACTION: RISKS AND BENEFITS OF PHEROMONE-INDUCED BEHAVIORAL STATE CHANGES

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Exposure to ecologically relevant sensory cues can alter an animal's behavioral state. Previous work has shown that exposure to female pheromones can lead males to increase mate-searching behaviors. However, this behavioral state change might involve risks because it can reduce general attention. Here we investigate the risks and benefits of pheromone-induced state changes in the jumping spider *Phidippus audax* (Salticidae). We hypothesized that males exposed to female pheromones will increase courtship behaviors but will be less responsive to predatory cues. To investigate courtship behaviors, we tested whether pheromone-exposed males are faster to recognize, and more likely to vigorously court, a female image. We found that while pheromone-exposed males did not detect a female image faster, they engaged in longer bouts of courtship. To investigate the effect of pheromones on responsiveness to predatory cues, we tested if freely moving spiders were less responsive to a predatory wasp buzz sound. We found that, contrary to predictions, pheromone-exposed spiders were more likely to respond to predator sounds. We also predicted that pheromone-exposed spiders that were inspecting a conspecific image would be less likely to shift their gaze to a looming stimulus that might indicate danger. Using a specialized eyetracker, we found that all spiders, regardless of treatment group, looked at the looming stimulus. Thus, our data suggest that pheromone exposure increases courtship effort and potentially mating success without reducing attention to predator cues in either the visual or auditory modality, and in fact pheromone exposure increases the responsiveness of spiders to predator sounds.

Oral presentation.

¿DO I ATTRACT YOU? ANALYSIS OF THE PRESENCE AND ROLE OF CONTACT SEX PHEROMONE IN A PSEUDOSCORPION

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Chemical signals are one of the ancient forms of communication among individuals of the same species. Sex pheromones are a type of chemical signal that transmit valuable information in a sexual selection context, such as transmitter condition, and influence mate choice. In pseudoscorpions, the presence of pheromones has been suggested on multiple occasions but has yet to be demonstrated experimentally. In *Victorwithius similis*, the males have a glandular setae patch on the VIII sternite. It has been observed that the females actively follow the male and initiate courtship, suggesting he leaves some trail. This work aims to determine the presence of contact sex pheromones and their role in intersexual chemical communication in *V. similis* and the importance of the glandular patch on males. We expect the presence of sex pheromones in both males and females and that secretions emitted by the glandular patch act as attractants for females. We performed two behavioral bioassays (1) uncovered gland male (n=12); (2) covered gland male (n=12). Time spent by females and males in the capsule area that previously harbored an individual of the opposite sex was analyzed. Preliminary results indicate that females spend more time in areas of the capsule previously inhabited by the male; this tendency is not yet clear for males. Once the results are completed, they will be discussed from communication and sexual selection perspectives.

Oral presentation.

EIGHT-LEGGED JEWELS IN THE HAZE: AN APPROACH TO TARANTULA (ARANEAE: THERAPHOSIDAE) DIVERSITY AND BIOGEOGRAPHY IN THE JUBONES BASIN, SOUTHWESTERN ECUADOR

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We describe two new species of *Thrixopelma* Schmidt, 1994 and a new species of *Tapinauchenius* Ausserer, 1871 from the Jubones river basin, a dry highland valley on the southwestern slopes of the Andes of Ecuador. This is the first record of *Tapinauchenius* in the western slopes of the Andes, showing a disjunct biogeographical distribution, and presenting a novel spermathecae character shared with *T. subcaeruleus* Bauer & Antonelli, 1997. The presence of these new species provides the first evidence of mygalomorph spiders supporting the hypothesis of biogeographic connections between Amazonia and the southwestern Andean slopes of the Andes, previously proposed for some vertebrates and plants. In the case of *Thrixopelma,* two possible dispersion routes are proposed based on the known species distribution on the Andean and Amazonian lowlands of Peru and Ecuador. This is the first biogeographical approach to the southern species of tarantulas in Ecuador.

Oral presentation.

COMPLEMENTARY OF TAXON- VS. TRAIT-BASED METRICS TO UNDERSTAND DIVERSITY PATTERNS IN NEOTROPICAL FOREST SPIDERS

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Using a large-scale design (gradient of forest structure repeatedly sampled in 4 sites distributed over French Guiana), we tested the redundancy between metrics of taxon- vs. trait-based diversities in spiders, a mega-diverse, yet less-studied, group of predatory arthropods. All spiders were identified to family level and then discriminated to morpho-species (described species whenever possible) using both habitus and sexual organs to estimated taxonomic diversity (TD) to eventually compute 3 diversity metrics (q0-Species richness, q1-Shannon diversity, q2-Simpson diversity). We measured 6 biometric traits on all individuals to better estimate functional diversity (FD), together with the hunting guild of spiders (attributed to family level). We first tested for correlations between a first global set of diversity metrics using all possible combinations of traits. Our results overall showed a little influence of including or not juveniles, a little influence of q order (except for increasing correlations between FD and TD metrics), a little influence of several traits (except for hunting guilds that drove most of the FD patterns) and conversely a strong influence of forest type on both TD and FD patterns which were globally correlated. While these results suggest an important environmental filtering, even in tropical forests, the precise role of abiotic factors and the influence of species and traits in composition turn-over remain to be tested.

Oral presentation.

UNDERSTANDING THE WOLF SEX: MORPHOLOGY AND EVOLUTION OF GENITAL ORGANS IN WOLF SPIDERS (ARANEAE: LYCOSIDAE)

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Spiders' genital characteristics are the primary source of distinguishing species, genera, and families. In phylogenetic analyses of Lycosoidea, genitals traits contribute between 40% to 60% of the characters, growing to 66%-79% for analysis at the generic level. Despite their dominance, few studies have compared the genitalia of different groups, proposing sclerite homologies, particularly in Lycosidae. A comprehensive comparative study of Lycosidae genitalia will resolve terminology conflicts for male copulatory bulb sclerites based on reliable comparative morphology. In this work, we examine the diversity of Lycosidae genital structures in an evolutionary context, constructing a new phylogenetic hypothesis using molecular and morphological traits. To archive this, we constructed a matrix with about 220 terminals representing all subfamilies of Lycosidae as well as several outgroups, with approximately 80 morphological characters and about 2700 molecular characters containing fragments of nuclear (28s and H3) and mitochondrial (12s, NADH, and COI) markers. As a result of the study of the genitalia of a diverse taxonomic sample, terms like "palea" and "synembolus" were redefined, and new others like "lycosid tegular projection" were defined. Detailed descriptions of the genitalia of each subfamily of Lycosidae, including new synapomorphies, were also compiled. Except for Pardosinae, which emerge as sister group of Lycosidae, and a new subfamily composed by *Trabea* and *Proevippa*, the tree topology generally matches previously published. In addition, the inclusion of a broad sample of South American taxa led to the discovery of new clades, indicating the existence of undescribed genera.

Oral presentation.

SIN DIÁLOGO, ¿HAY CÓPULA? EL COMPORTAMIENTO SEXUAL DE *Pavocosa gallopavo* (ARANEAE: LYCOSIDAE) CON HEMBRAS DORMIDAS

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La mayoría de los comportamientos sexuales estudiados en arañas se centran en el macho. Sin embargo, las hembras de *Pavocosa gallopavo* poseen un rol sumamente activo durante el encuentro sexual. Se planteó evaluar si la ausencia de comportamientos femeninos afecta dichos encuentros. Se realizaron 75 encuentros sexuales con individuos vírgenes y hembras anestesiadas con CO_2. Se registraron las características del encuentro sexual y compararon con la descripción del comportamiento sexual reportado para la especie. Se realizaron conteos del esperma almacenado en los bulbos y espermatecas de los individuos utilizados, anexando conteos control en 20 machos vírgenes. Se ajustaron Modelos Lineales Generalizados acorde a la distribución de los datos. Bajo anestesia, el éxito de cópula (24%) fue inferior al registro previo (81%, $p<0.001$). En un 45% de los casos los machos lograron montar, pero no insertar. El 37% de los machos que copularon, se desorientaron previo al momento de montar. La cópula duró 4.00 ± 1.99 minutos, superando al registro previo (1.74 ± 0.82 minutos, $p<0.001$). El número de inserciones (7 ± 4) fue inferior al reporte previo (12 ± 4), y se relacionó positivamente con la duración de la cópula ($p<0.001$). Se registraron 2781 ± 3982 espermatozoides almacenados en las hembras. El esperma remanente en machos copulados (202703 ± 59717) fue menor al disponible en machos vírgenes (259318 ± 83059, $p=0.01$). Las conductas femeninas tendrían un rol en la correcta orientación del macho y acceso a su genitalia. Se discutirán estos resultados en el marco de selección sexual postcopulatoria.

Oral presentation.

RIDING ON ANTS: FIRST REPORT OF THE ASSOCIATION BETWEEN *Attacobius nigripes* (CORINNIDAE) AND THE LEAF-CUTTING ANTS *Acromyrmex lobicornis* (HYMENOPTERA, FORMICIDAE)

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Attacobius spiders are known as myrmecophiles and association between these spiders with different ant species were reported in Brazil. This genus, endemic to South America, belongs to the Corinnidae family and has 16 described species. Until now only three species are known to be myrmecophiles, *Attacobius attarun* and *A. luederwaldti* were reported in close association with leaf-cutting ants of the genus *Atta,* and *A. lavape* with *Solenopsis* ants. However, the amazing riding behavior of these spiders on ants was only reported for *A. attarun* and *A. luederwaldti*. Spiders would live inside ant nests and are very hard to find, being difficult to record their natural history. *Attacobius nigripes* (Mello-Leitão 1942) was recorded in Chaco and Córdoba provinces in Argentina. It is the only species of the genus in this country and data about its natural history is unknown. In addition, males of this species remain undescribed. Here, we report for the first time the association between *Attacobius nigripes* and the leaf-cutting ants *Acromyrmex lobicornis*. We found spiders at night riding on worker ants in trails and entrances of ant nests. These observations add a new myrmecophile species to the genus *Attacobius* and provide a new ant species to this kind of interactions. Moreover, this is the first report for the genus in Mendoza province, extending its current known distribution. The riding behavior on ants is reported for first time for *Attacobius nigripes* and the possible myrmecophile association between this spider species and the leaf-cutting ants *Acromyrmex lobicornis* is discussed.

Oral presentation.

EVOLUTIONARY HISTORY AND SYSTEMATIC REVIEW OF THE ANDEAN-PATAGONIAN TRIAENONYCHIDS (OPILIONES: LANIATORES: TRIAENONYCHIDAE)

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Triaenonychidae is the fourth most diverse family of Opiliones, with 400 valid species and subspecies. Neotropical triaenonychids are found in the southern part of the continent (Chile, Argentina, and Brazil), with 11 genera and 26 known species before this study. This review aims to develop a phylogenetic hypothesis to explain the evolutionary history of the Andean-Patagonian triaenonychid diversification process and build a classification system based on monophyletic categories. To accomplish this, where examined 5000 specimens and sequenced fragments of three molecular markers (COI, 18S, and 28S) for 50 terminals. In addition, was added UCE sequences for 281 terminals from both, the internal and external groups. Was used optical and electronic microscopy for the morphological study, characterization, redescription, and description of the species. The results support that Andean-Patagonian triaenonychids do not recover as a monophyletic group, on the contrary, they belong to five different clades that include other species from Australia, New Zealand, and South Africa. The dated phylogeny suggests that the triaenonychids were already diversified before the breakup of the supercontinent Gondwana. This review enabled the reorganization of the Andean-Patagonian triaenonychid genera, as well as several transfers, synonymies, revalidations, and proposal of nine new genera and 31 new species.

Oral presentation.

COPULATORY MECHANICS IN *Josa* (ANYPHAENIDAE) — UNVEILING THE FUNCTION OF FEMORAL APOPHYSES IN SPIDERS THAT LOST THE RTA

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The male copulatory organs (copulatory bulbs) of spiders are located in their pedipalps which can carry diverse structures with different functions that facilitate the mating process. During evolution, functional replacements between genital structures may occur and can eventually even lead to the loss of a structure. One example of a functional replacement involves the retrolateral tibial apophysis (RTA), a characteristic male structure of the RTA clade, which is frequently used for primary locking (i.e., the first mechanical engagement between male and female genitalia). However, in some lineages, as many Amaurobioidinae (Anyphaenidae), the RTA has been functionally replaced with the conductor. Unlike the rest of the amaurobioidines, the males of the genus *Josa* bear a hook-like femoral apophysis for which a similar function can be hypothesized. Here, we test this hypothesis by reconstructing the copulatory mechanics using micro-CT data of cryofixed mating pairs of two *Josa* species. We show that the femoral apophysis does not contact the female genitalia, and instead favors the structural stability of the pedipalpal insertion by hooking on a semi-soft notch of the copulatory bulb. Primary locking is instead achieved by the conductor, as in other Amaurobioidinae, replacing the function of the RTA. We conclude that the femoral apophysis of *Josa* evolved secondarily to provide structural stability of the copulatory bulb during insertions.

Oral presentation.

THE TALE OF THREE COUSINS: SYSTEMATIC REVISION OF THE LANIATOREAN GENUS *Paraconomma* ROEWER, 1915

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Over the last two decades, major systematic revisions on several groups of laniatorean harvestmen (Opiliones: Laniatores) have confirmed the polyphyletic nature of the roewerian concept of the family Phalangodidae. This major redefinition resulted in several laniatorean genera whose family affinity remains uncertain, including the Grassatores *incertae sedis* genus *Paraconomma* Roewer, 1915. The type species of this genus, *Paraconomma argentina* Roewer, 1915, was originally described from "Bahía Blanca" (Buenos Aires Province, Argentina) a proven spurious locality that appeared on the labels of several species of harvestmen described by Roewer around that time. For nearly three decades, the genus remained monotypic, until Clarence and Marie Goodnight described two more species from Puerto Rico: *Paraconomma ovala* Goodnight & Goodnight, 1942 and *Paraconomma spinooculorum* Goodnight & Goodnight, 1942. The recent collection of *P. argentina* in Misiones Province (Argentina) allowed us to correct the geographical distribution of this species and investigate this improbable disjunct distribution. We discovered that the three current species of *Paraconomma* not only belong in three different genera, but that those genera belong to three distinct family-level lineages (Samoidae, Escadabiidae and Zalmoxoidea *incertae sedis*) and represent two different superfamilies (Zalmoxoidea and Samooidea). The three distantly related species were mistaken for sister-taxa based solely upon superficial similarities in external morphological traits, but in fact, genitalic morphology and molecular phylogenetics tell a very different story. We review the history of this group, investigate the true evolutionary relationships between these taxa, and propose systematic revisions that place these species within their proper groups.

Oral presentation.

VIBRATORY SIGNALLING PATTERNS IN MALE *Steatoda nobilis* DURING COURTSHIP DISPLAYS

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In web-dwelling spiders, web-borne vibrations are thought to be the primary form of communication during mating interactions. As part of a comparative study of vibrational communication in cobweb spiders, we have examined the structure of male vibrational courtship signals in the Noble False Widow (*Steatoda nobilis*) and their relationship with female receptivity and male mating success. We conducted mating trials in which females were paired, independently and in sequential order, with two males. Male courtship, female acceptance and copulation behaviour was recorded on video. Male web-borne vibrational courtship signals were recorded using two laser Doppler vibrometers (LDV), and signalling was analyzed using synchronous video and vibrometry recordings. Similar to some previous studies on theridiid spiders, males produced multiple vibrational signals during courtship interactions. We recognized three distinct signal components. Abdominal vibrations are produced by rapid oscillations of the abdomen. Web plucking signals are produced when males grasp and release individual strands of the web using their second pair of legs. Jerk signals are the result of rapid dorsoventral movements of the male's entire body. The stereotypical signal sequence started with jerking, followed by abdominal vibrations, and lastly, the plucking. The timing, sequence, and duration of individual components was highly variable among males during courtship, as well as their mating success. We discuss which signal components are more important for female mating receptivity and male mating success, as well as their relationship with male size and condition.

Oral presentation.

DIFFERENCES IN THE FINE-STRUCTURE OF CRIBELLAR THREAD ATTACHMENTS INDICATE DIVERGENT CONSTRUCTION BEHAVIOR AND BIOMECHANICAL FUNCTION

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The spider cribellate threads are composites of different types of silk fibers. Their interplay influences the mechanical properties of the complete thread. For example, it has been shown that the coiling or undulating fibers, known as reserve warps, contribute to thread extension and increased work to fracture. For being fully functional, the thread has to be secured within the web by anchors to other threads, especially ampullate ones. The morphology and microscopic structure of these attachments, however, has not been examined in detail. Here, we show that the attachment of the cribellar threads to other threads in the webs and to the substrate is performed either with piriform silk or by mere contact of the cribellar fibrils. The architecture of the piriform silk attachments varies between and within cribellate lineages, as a result of specific differences in construction behavior. We found that, while some spiders attach the complete cribellate thread, others only attach the coiled reserve warp fibers and some cribellar fibrils, but the axial fibers bypass the attachment. Based on our findings we hypothesize that the main function of the axial fibers is to maintain the intact threads in position in the web, but the reserve warps attached by piriform silk provide strong retention and, as they uncoil and interact with the cribellar fibrils, retain the prey for more time and at longer distance. We discuss the phylogenetic distribution of the different types of attachments and their correlation with the morphology of spinning organs.

Oral presentation.

THE MECHANISM AND FUNCTION OF SELF-SACRIFICE IN THE BROWN SPIDER

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Male self-sacrifice during mating is one of the most extreme forms of male reproductive investment. In two apparently self-sacrificial widow spiders (*Latrodectus hasselti* and *L. geometricus*), males can mate with both adult and subadult females ('immature mating') but only with adults do they actively invite cannibalism via a copulatory 'somersault' into the fangs of the female. In *L. hasselti*, self-sacrifice prolongs copulation and decreases the remating probability of the female, thereby increasing male reproductive success. Here we investigate the causes and consequences of copulatory cannibalism in *L. geometricus*. First, we use microtomography to show that copulatory mechanics are identical whether or not males somersault during mating. Additionally, although it has been described as self-sacrifice, we observed that the somersault can be facilitated or possibly triggered by the female via abdominal movements and/or pulling the male toward her mouthparts. Further, we investigated the effect of presence and absence of somersaulting and cannibalism on mating and remating outcomes for adult and subadult females. Our behavioural experiments show that males in better condition are more likely to somersault and to be cannibalized by their mates, suggesting that this behavior may affect male paternity through female choice. However, neither male somersault nor female cannibalism reduce female remating rates, and it is unclear whether these behaviours increase male fitness. Moreover, males that do not somersault copulate for nearly twice as long as males that do somersault. Further investigation (i.e. paternity analysis) is needed to elucidate the effect of this behavior on male reproductive success and postcopulatory female mate choice.

Oral presentation.

A NOVEL *Iroquois* COPY IS REQUIRED FOR PATTERNING THE BOUNDARY BETWEEN PROSOMA AND OPISTHOSOMA IN THE SPIDER *Parasteatoda tepidariorum*

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The chelicerate body plan is fundamentally distinguished from other arthropod groups by its division of segments into two tagmata: prosoma and opisthosoma. However, little is understood about the genetic mechanisms that establish the prosomal-opisthosomal tagmatic boundary, as well as other major body regions, such as eye fields, and specialized appendages. These investigations are hindered by an ancient whole genome duplication, which has resulted in numerous gene copies through spider genomes. To accelerate the study of chelicerate body plans, we created high-quality genomic resources for the tarantula *Aphonopelma hentzi* and dissected specific segments along the antero-posterior axis of developing embryos. We sequenced these tissues and applied a differential gene expression approach (DGE) to identify important regulators of anterior and posterior identity. We additionally developed a protocol for fluorescent co-localization of paralogous genes' expression, using hybridization chain reaction, and successfully implemented this technique for the first time in spiders. After functional screening, we identified a homolog of the Iroquois complex of genes (*Iroquois4*) that is required for proper formation of the boundary between the tagmata. Knockdown of *Iroquois4* in the model spider *Parasteatoda tepidariorum* resulted in deletion of the posterior prosoma. We show that the mechanism of *Iroquois4* activity is through proper specification of dorsoventral identity in the segments that span the boundary between the tagmata. Our results suggest that the activity of two transcription factors, *Iroquois4* and *pannier2*, is necessary for patterning the boundary between prosoma and opisthosoma. More broadly, these techniques open new approaches for study of spider body plans.

Oral presentation.

SPECIES DELIMITATION OF CHIHUAHUAN AND GREAT PLAINS EREMOBATES PALPISETULOSUS SPECIES GROUP THROUGH AN INTEGRATIVE TAXONOMIC APPROACH

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The *Eremobates palpisetulosus* species group provides a model to understand the evolutionary history of solifuges within the Chihuahuan and Great Plains eco-regions. The biodiversity of these regions, currently composed of 16 species, is potentially underestimated owing to the complexity and similarity of diagnostic characters used to identify taxa. The species rich group is supported by the synapomorphy found on the upper cheliceral finger of the males, a retrodorsal process (RDP). The group was found to be polyphyletic based on a family level phylogeny using an exemplar sampling approach which has invalidated the presence of the RDP as a synapomorphy for a species rich group. The family level phylogeny found there to be several potential monophyletic clades showing biogeographic signatures from the Chihuahuan, Great Plains and the Cochise filter. The lineages within the broad range may have diverged during the mid-Miocene and have undergone adaptive radiation following either the Last Interglacial Period or Last Glacial Maximum. The *E. palpisetulosus* species group is being re-evaluated using DNA for divergence, bioclimate data to produce climatic niche models for the regions, analysis of cheliceral morphology in males, and examination of genital opercula morphological differences in females. Utilizing multiple approaches for analyses will shed light on the divergence of lineages within the Chihuahuan and Great Plains. In the presentation, I will provide progress on the biogeography and morphological analysis that has been used to straighten out the paraphyletic mess that is the *E. palpisetulosus* species group.

Oral presentation.

DIVERSITY AND DISTRIBUTION PATTERNS OF XENOCTENIDAE SPIDERS (ARACHNIDA: ARANEAE) IN PERU

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In Peru, taxonomic studies are needed to take advantage of the benefits offered by spiders. Predators by nature, and habitat specialists, for the most part, they can help as bioindicators in environmental assessments in a country under high pressure from numerous anthropogenic drivers, particularly, habitat loss due to land use changes. One group of spiders in predominantly arid environments of the Peruvian coast and highlands is the family Xenoctenidae. Only three species have been recorded for the country, each assigned initially to a different genus; worldwide, there are four genera and 33 species, the vast majority under a single genus, *Odo* Keyserling 1887. The examination of scientific collections reveals that, there are at least 12 species in Peru, 11 belonging to *Odo* and one to a genus new to science. *Odo insularis* Banks 1902, known only from Ecuador, also occurs in Peru and exhibits a wide distribution from northwestern to central western regions. *Odo lycosoides* (Chamberlin 1916) is found only in southern Peru in apparent sympatry with a new species that occurs also in northwest Argentina. *Odo patricius* Simon 1900 occurs from southwestern Peru to northern Chile. *Incasoctenus perplexus* Mello-Leitão 1942 is transferred to *Odo* and a neotype designated; this species appears to be sympatric with two other species around the Lachay lomas in central western Peru. Further fieldwork is recommended to clarify the biogeographic patterns of xenoctenids, a group that harbors species new to science and exhibiting a high degree of local endemism.

Oral presentation.

UNDERSTANDING THE DIVERSITY AND EVOLUTION OF THE *Aphonopelma marxi* SPECIES COMPLEX IN THE MADREAN SKY ISLAND ARCHIPELAGO

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The Madrean Sky Islands are an important biodiversity hotspot due to their location between the Rocky Mountains/Colorado Plateau and the Sierra Madre Occidental of México. These forested islands rise from desert grasslands surrounded by the Sonoran and Chihuahuan deserts. In general, Sky Island mountain ranges are characterized by the stacking of biomes (desert, grasslands, pine-oak, mixed conifer forest etc.) created by their dramatic change in altitude and complex climactic conditions. Since the last glaciation, the Madrean Pine-Oak Woodlands have become increasingly isolated from each other, limiting genetic interchange between populations, thereby producing favorable conditions for diversification. This is the case for the *Aphonopelma marxi* species group of tarantulas. The genus *Aphonopelma* is a diverse group that includes 59 described species across the US and México. They are found throughout a variety of habitats including the Madrean Sky Islands at both high (pine-oak) and low (desert grasslands) elevations. Here, we use 1200 UCE loci from a preliminary set of samples across 22 different mountain ranges of the Madrean Sky Islands of both the US and México. We infer a phylogeny that, combined with ecological niche modeling, will help assess how these mountains lead to the Marxi species group diversity and how their distributions will be impacted by climate change in the future. This work is the first representation of several populations of Madrean Sky Island tarantulas and establishes a foundation to understand the groups phylogenetic relationships, biogeographical history, and diversification.

Oral presentation.

A NEW BIOGEOGRAPHIC MODELING APPROACH ON THE SOUTHERNMOST LIMITS OF THE ATLANTIC FOREST BIOME USING SPIDERS

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Based on the known distribution of 17 species of Neotropical araneomorph spiders, we tested the intrusion of these species further south of the Atlantic Forest, in the Pampean zones. We used species distribution modeling methodology with the favorability function and 49 predictor variables comprising spatial, climatic, hydrological, soil coverage, topography and land use data. For the analysis, we selected spider species with known distribution in the transitional zone between both biomes. We divided the South American area into 181,221 hexagons (approximately 6.2 km apotheme) using QGIS v3.22. For mapping modeling results, we overlaid a vector map of the ecoregions of the Atlantic Forest and others South American biomes. The general model, with all the species analyzed, obtained anoutstanding discrimination (Area Under the Curve, AUC=0.979). Furthermore, we recovered models for each species with high favorability (F > 0.8), where the spatial component in combination with the land cover were the most important explanatory factors. The results confirm that the distributional patterns of several species are highly associated to the Atlantic Forest biome by the presence of stream courses and sensitive to moisture gradients. The models predicted an expansion of 700 km further south along the riparian forests that do intromission into the Pampean biome (Uruguay, Buenos Aires and Entre Ríos Provinces, Argentina) from the Upper Parana Forest and Serra do Mar Forest. These results show a scenario of the influence of the Atlantic Forest in the Pampean Province, with emphasis on diffuse limits in biogeographical transition zones and their implications for conservation plans.

Oral presentation.

SNEAKER MALES MIMIC FEMALES AND DECEIVE TERRITORIAL MALES IN A HARVESTMAN WITH ALTERNATIVE REPRODUCTIVE TACTICS

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In many species, large-bodied males with exaggerated weapons (majors) fight for territories containing oviposition sites. In turn, small-bodied males with poorly developed weapons (minors) perform alternative reproductive tactics (ARTs) that do not involve fights. In the harvestman *Serracutisoma proximum*, majors defend territories containing oviposition sites, whereas minors invade these territories to mate with females. Given that harvestmen have poor vision and rely mostly on chemical communication, we tested whether minors mimic the odors of females to pass unnoticed by the majors. To test this hypothesis, we used an experiment in which we introduced a female, a minor, and a major separately in the territory of 30 majors. Majors have a high probability of reacting aggressively against newcomer majors, but not against females and minors. Moreover, majors courted both minors and females, indicating that majors do not differentiate them. These findings suggest that minors use a tactic of female mimicking to invade territories. In my talk, I will also present data on the density of chemoreceptors on the sensory legs and the cuticular hydrocarbon profile of females and males.

Oral presentation.

ALL THINGS CONSERVED: EMPLOYING ULTRACONSERVED ELEMENTS AND MACHINE LEARNING FOR SPECIES DELIMITATION AND CONSERVATION

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As global biodiversity continues to diminish due to rapidly changing climatic conditions and human factors, the conservation of species is more important than ever. To preserve the effectively maximum available diversity, areas of high diversity and endemism must be identified using phylogenetically informed diversity metrics. Here we assessed conservation threats to cave systems in Israel, using as bioindicators species of the funnel-web spider genus *Tegenaria*. A broad spectrum of eye morphologies has been observed in these spiders, together with strong associations with specific cave sites. These associations suggest specific patterns of speciation and the formation of microendemic groups of *Tegenaria*. Using barcoding, RAD-seq, and UCE-seq, we assessed the phylogenetic diversity of Israeli *Tegenaria* across dozens of cave sites. Our data pinpointed numerous cryptic species, with many of these microendemics restricted to a single cave site. We employed the spatial analysis software Biodiverse and Categorical Analysis of Neo- and Paleo-Endemism (CANAPE) to generate conservation metrics that are informative for future policy and circumscribe areas for conservation priority.

Oral presentation.

SPIDER AND OPILIONES BIODIVERSITY IN NEW ZEALAND HORTICULTURAL ECOSYSTEMS

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Spiders contribute to pest suppression in agroecosystems by direct and non-direct consumption. They provide an ecosystem service which contribute economic gains to horticultural growing systems, such as apples, wine grapes, and kiwifruit. Very few studies on spider biodiversity in cropping systems have been completed in New Zealand, and no studies have been published in New Zealand orchard systems. In this study, spiders were sampled from vineyards, apple orchards, and kiwifruit orchards in three New Zealand locations, Waipara, Motueka, and Kerikeri. Spiders were sampled using pitfall traps, sweep netting, active day sampling, and active night sampling. A total of 1359 spiders and 87 opiliones were caught in this study, from 17 families and 31 species. Sixteen of the 32 (50%) species found were introduced, 10 (31.3%) endemic to New Zealand, two species (6.3%) native to New Zealand, and six (12.5%) unknown. There were five dominant spider families caught (Araenidae (46%), Lycosidae (17%), Theridiidae (16%), Linyphiidae (13%), and Desidae (3%)), and of the adults, there were five dominant species: *Anoteropsis hilaris* (Lycosidae), *Tenuiphantes tenuis* (Linyphiidae), *Cryptachaea veruculata*, *Cryptachaea blattea*, and *Steatoda capensis* (Theridiidae). A single species of Opiliones was caught, *Phalangium opilio*. This study provides the first important step in describing the spider families and species found in three economically important New Zealand horticultural systems.

Oral presentation.

ENDEMIC MYGALOMORPH SPIDERS OF WESTERN GHATS, INDIA

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In recent years, the fragmentation of forest areas in various places of the western ghats has posed a threat to the survival of the Mygalomorph spiders. Only 121 species belonging to 29 genera and eight families have been documented in India so far. During the course of my research that spans the last five years, six families, including Barychelidae, Halonoproctidae, Idiopidae, Ischnothelidae, Nemesiidae, and Theraphosidae, have been discovered in the western ghats of Kerala State. In addition, around 18 genera belonging to diverse families have been identified in various parts of Kerala's western ghats. As part of the study, many new distributional data and new insights into their taxonomy and ecology are compiled. Important endemic genera such as Haploclastus, Annandaliella, Sahydroaraneus, Thrigmopoeus, Heterophrictus, and Neoheterophrictus of the family Theraphosidae; Gravelyia of the Family Nemesiidae, and Sasonichus of the Family Barychelidae, have been reported from the western ghats of India during the current study. Presently, nearly one-third of Indian mygalomorphs are endemic. Since much of India's mygalomorph diversity is unexplored, this figure is likely higher. The high incidence of endemism may have resulted from the geological separation of the Indian landmass during the Gondwana period. Several factors such as habitat degradation, commercial logging, flooding, the pet trade, and climate change. are now posing increased risk to their survival.

Oral presentation.

THE FLICKER FUSION CAMOUFLAGE EFFECT: EFFECTS OF PATTERN, SPEED, AND EYE-MASKING ON CAMOUFLAGE OF MOVING STIMULI IN JUMPING SPIDERS

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Animals with high-contrast patterns are often thought to become more conspicuous when they move. More recently, studies have shown otherwise: high-contrast patterns can blur when an animal moves quickly enough through a strategy known as flicker fusion camouflage. However, there is limited empirical evidence for this notion. Here, we tested for the effectiveness of this strategy using the jumping spider (*Menemerus bivittatus*) and computer-generated stimuli of different patterns (i.e. black, grey, thin, black-and-white vertical stripes, thick, black-and-white vertical stripes, black-and-white horizontal stripes, and background matching) moving at three speeds. To understand how patterns can be used to exploit the visual constraints of the viewer, salticid spiders were also subjected to three different eye-masking treatments (i.e. unmasked, antero-median eyes (AME)-masked, and antero-lateral eyes (ALE)-masked), and their responses to stimuli were recorded. Our results showed that stimulus speed, pattern, and eye-masking significantly affected spider responses. Spiders generally showed lower responses when stimulus speed was fast. Compared to the grey stimuli, thin and vertically striped stimuli elicited higher responses for unmasked spiders. ALE-masked spiders responded less than unmasked and AME-masked spiders. However, ALE-masked and AME-masked spiders had low responses to the striped stimuli at high speeds. Taken together, our findings suggest that faster stimulus speeds may effectively exceed the salticid's flicker fusion frequency threshold so that salticids may be unable to resolve the moving thin striped patterns, thus supporting the flicker fusion camouflage hypothesis.

Oral presentation.

EVALUATING THERMAL NICHE OF A PREDATOR–PREY SYSTEM: DO SPIDERS HAVE SIMILAR PREFERRED TEMPERATURES THAN THEIR PREY?

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Ectotherm predators and their prey could respond differently to habitat temperatures, predators could select warmer temperature to increase their probabilities of capture and prey could select warmer or cooler temperatures that may enhance their escape capability. This work reports on a study that aims to characterize the thermal niches of a spider predator species and its arthropod prey using both field and laboratory analyses. We used a common spider as predator: *Loxosceles laeta* and three syntopic and synchronous potential prey types: *Psammetichus costatus* (Coleoptera), *Pycnoscelus surinamensis* (Blattodea) and *Porcellio laevis* (Isopoda). The results showed that preferred temperatures were different between species and changed with the period of activity only in predators, with low temperatures in the morning and high temperatures at night. On the other hand, the three prey species had lower preferred temperatures than the predator, without any differences between day and night. Considering ambient temperatures, we found a high overlap between predator and their prey, while in the laboratory, the niches are completely different. This suggests that predators look for their prey in places that are not thermally suitable for them, whereas the prey may use this strategy of selecting low temperatures in order to evade potential predators.

Oral presentation.

TO DISCOVER THE UNDISCOVERED – THE DIVERSITY OF JUMPING SPIDER FAUNA FROM THE PHILIPPINES ARCHIPELAGO – PRELIMINARY RESULTS

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Climate change is accelerating the process of species extinction, mainly in tropical regions. One particularly valuable area is the Philippines Archipelago, consisting of over 7,100 islands. Salticidae are one of the intriguing and understudied groups of animals inhabiting the Philippines. Current biodiversity studies rely on integrative taxonomy like morphological identification supported by analysis of the COI gene fragment – commonly used as animal DNA barcode. Based on the literature, 48 genera represented by 134 species have been recorded in the Philippines – 81 seem to be endemic. There are no publicly available DNA barcodes for jumping spiders from the Philippines. The project aims to: a) reveal the diversity, b) build the DNA barcode reference library, and c) discover the origins of Salticidae fauna in the Philippines. The research was conducted on 1500 specimens collected during our expedition to Mindanao Island in 2019. We identified over 50 genera and 100 morphospecies, representing a wide variety of mostly undescribed species. Among them, 27 salticid genera are new to the fauna of the Philippines. DNA barcoding (150 individuals) analysis on preliminarily selected morphospecies indicated the presence of 69 mitochondrial genetic lineages (BINs) that may turn out to be distinct species. One of the most intriguing discoveries so far is a possible new genus characterized by the presence of cheliceral horns in males. Our results significantly increase the knowledge about salticid fauna in the Philippines. Foreseen results of the project will be an updated comprehensive checklist of the Salticidae from the region, with new species/genera descriptions.

Oral presentation.

AN ATTEMPT TO REUNITE THE PACIFIC BOUNTY HUNTER, *Pacificana cockayni* HOGG, WITH ITS FAMILY

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Pacificana cockayni Hogg, 1904 is a large spider endemic to the Bounty Islands, which are a small, isolated group of 13 granite islets and numerous rocks in the South Pacific Ocean (47.75°S, 179.03°E). This species was known only from females until now and was originally placed in the Agelenidae, then transferred to Amaurobiidae, then to Amaurobioididae and it now is *incertae sedis* in Miturgidae. We have examined recently captured males and found that they possess paired retrolateral stridulatory spurs on the trochanter of the male pedipalp and an associated stridulatory field on prolateral face of male coxa of leg I. This feature is also found in males of the two New Zealand genera *Otira* Forster & Wilton (Amaurobiidae) and *Pakeha* Forster & Wilton (Cycloctenidae), and the Australian genera *Oztira* Milledge and *Storenosoma* Hogg (both in Amaurobiidae). We sequenced an 1189 bp fragment of cytochrome *c* oxidase subunit 1 (COI) in the hope that a phylogenetic analysis might reveal which family it should be placed in but alas we are none the wiser. We place it in Amaurobiidae for now and hope that future phylogenetic analyses with more genes and taxa resolve its placement and the placement of other troublesome marronoids.

Oral presentation.

CURRENT KNOWLEDGE ON THE SENSORY BIOLOGY OF HARVESTERS (OPILIONES)

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Sensory biology is growing as a research area, with an increasing number of papers published. Being fundamental to understanding animal behavior, the number of papers published in 2021 is two times greater than ten years before. For Opiliones, the last review on sensory biology was published in 2009. We thought that harvesters had limited abilities to detect stimuli at a distance, that close-range olfaction was used only for strong odors such as rotten food, and that, except for specific species, vision only helped with distinguishing dark/bright. There have been important changes to this scenario in the latter years. Harvesters are now known to detect conspecifics at a distance and olfaction is known to be widespread in the group. Chemoreception helps in orientation and may be involved in associative learning. Vision provides much more information than only ambient light; it helps in orientation, in distinguishing shades of gray, and in avoiding predation. Humidity and temperature receptors have finally been described. Sensory structures have also been used as suprafamilial taxonomic characters. Finally, I will discuss the implications of recent findings for understanding the behavior of harvesters.

Oral presentation.

ARE CHEMICAL DEFENSES AND COLORATION CORRELATED IN GONYLEPTIDAE?

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Many chemically-defended species have bright colors, which warn, to visually guided predators, that they are not palatable. Chemical defenses in Opiliones are well studied, and the nature of these chemicals may vary among species. Some of them have bright colors for human eyes, forage or rest in exposed places, and have diurnal activity. These traits are typical of aposematic species. We aimed to assess whether there is a correlation between chemical defenses and coloration in Gonyleptidae (N = 24 species). We expected that species with more volatile chemical defenses would have more contrasting color patches. We collected information, in the literature, about the chemical substances present in species that occur in São Paulo, and used their respective boiling point (from the ChemSpider database), as a proxy for volatility. As a preliminary analysis for coloration, we used a qualitative categorization from photos in which seven people classified each species' colors as highly contrasting among them or not. We attributed +1 for each contrasting species and -1 for the non-contrasting, and divided the total by seven. The boiling point did not influence the color contrast. Ideally, colors should be addressed more objectively. Although human vision need not to be completely disregarded, analysis using proper color metrics should avoid any biases. Therefore, our next step is to conduct an analysis based on reflectance measurements and standardized photographs of those species, which will provide an objective data on coloration. Besides, it is possible the adaptive function of colors varies among species within the family.

Oral presentation.

CLARIFYING THE PHYLOGENETIC PLACEMENT OF THE EUPOINAE (ARANEAE: SALTICIDAE) WITH A NOVEL UCE PROBE SET

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The subfamily Eupoinae, an enigmatic group of minute leaf-litter dwelling jumping spiders, currently comprises only four genera and 38 species from Southeast Asia. Although previous molecular phylogenetic studies have suggested that it is one of the basal (non-salticine) lineages within jumping spiders, its exact placement remains unclear. Aiming to provide a well-resolved and better supported phylogeny for jumping spiders using the UCE phylogenomic approach, we recently developed a novel probe set (the RTA probe set, with 41,845 probes targeting 3802 loci) based on eight reference genomes for RTA-clade spiders, including salticids. The RTA probes recovered 2 to 4 times as many loci in salticids as the Spider and Arachnida probe sets according to an in-silico test, and, for the taxa so far sampled, yield phylogenetic relationships with higher support. We gathered RTA probeset data from major salticid lineages to investigate the phylogenetic relationships of salticid subfamilies, with special focus on the placement of the Eupoinae. The results provide a well-supported phylogeny for jumping spider subfamilies, and suggest a sister relationship of Eupoinae with Spartaeinae, another basal lineage of jumping spiders with relatively high species, morphological and behavioural diversity. The resolution of the deep structure of the family will help us understand ancestral traits and the early evolution of the family.

Oral presentation.

PROPORTIONAL PROCESSING OF COLOUR PATTERNS IN SEXUAL SELECTION OF JUMPING SPIDERS

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Animal decision-making process is shaped by their perceptual processing. One such processing is Weber's law of proportional processing, where animal discriminates between stimuli based on proportional rather than absolute difference in magnitudes. Weber's law has been reported in various behavioural contexts with different sensory modalities, but whether discrimination on colour pattern in sexual selection follows Weber's law of proportional processing remains untested. Here we addressed this by using the jade jumping spider, *Siler semiglaucus*, in which males bear sexually selected colour patterns and females prefer mates with lower pattern contrast. We manipulated male abdomen colour patterns to create individuals with varied pattern contrasts. We then conducted both female mate choice and male contest trials with males of varied absolute and proportional differences in pattern contrast. We found that females generally preferred males with lower pattern contrast and female discrimination between contrasts was based on both absolute and proportional difference. However, discrimination based on proportional difference coupled with absolute difference predicted female preference better than absolute difference alone. Moreover, neither absolute difference nor proportional difference in pattern contrast played a role in determining male contest outcomes. Our results suggest that lower pattern contrasting abdomen in males may have evolved through female mate choice but not male-male competition and that female discrimination on pattern contrast follows the Weber's law of proportional processing.

Poster presentations

Poster presentation.

PHYLOGENETIC ANALYSIS AND RECLASSIFICATION OF SPIDER FAMILIES CYRTAUCHENIIDAE AND RHYTIDICOLIDAE (ARANEAE, MYGALOMORPHAE) USING GENOMIC SCALE DATA

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Mygalomorphae spiders are a high diverse group that received recent considerable phylogenetic attention which has resulted in the recognition of several new family-level group taxa. Studies using morphological and/or molecular data and genomic scale data recovered Cyrtaucheniidae as poly- or paraphyletic that was recognized as one of the more problematic mygalomorph families. In this study, the reconstruction of relationship among Cyrtaucheniidae and Rhytidicolidae genera was performed using Anchored Hybrid Enrichment. A total of 64 taxa were sampled in our analysis, representing 40 genera from 13 of the 31 mygalomorph families. In ingroup, we included taxa of four of six Cyrtaucheniidae genera. Also included 16 representatives of Rhytidicolidae, one from *Rhytidicolus*, 14 from *Fufius* and one from a distinct lineage. In outgroups, we incorporated 44 samples representative of the mygalomorphs distributed in 11 families. Cyrtaucheniidae was recovered as a monophyletic group divided in two main lineages, one by *Cyrtauchenius* plus *Ancylotrypa* and the other by *Acontius* plus *Bolostromus*, each representing one subfamily, Cyrtaucheniinae and Aporoptychinae, respectively. Rhytidicolidae is composed of three main lineages, each represented by one genus, *Rhytidicolus*, *Fufius* and an unidentified lineage from Peru. Based on two of these three lineages, we recognize two monotypic subfamily-level taxa. Our results show *Fufius* forming a single lineage recovered as a sister group of *Rhytidicolus*, a new genus from Peru and *Diplura* plus *Linothele*. In additional, the monotypic genus *Bolostromoides* is considered as a junior synonym of *Bolostromus*. A new diagnosis is proposed for Cyrtaucheniidae.

Poster presentation.

PREDATORY BEHAVIOR IN THE SPIDER *Pikelinia* sp. (ARANEAE: FILISTATIDAE)

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Prey type is a determining factor in trophic interactions, as the morphology and the behavior of some prey condition the efficiency of some predators. Spiders are one of the most diverse groups of terrestrial predators, but despite their importance, most studies have focused on some groups like orb-web spiders and non-web builders, while the trophic ecology of most species is still unknown, especially in some groups such as cribellate spiders. Filistatid spiders are one of the most representative groups of cribellate spiders, with a widespread distribution and anthropic habits, which turns them into an interesting model to study their predatory behavior. Therefore, the aim of this study was to analyze the predatory behavior of the spider *Pikellinia* sp., against prey with contrasting morphologies, namely ants, beetles, cockroaches and flies. Prey were offered to spiders using a complete randomized block design. We evaluated the feeding strategy and acceptance of the spiders against the offered prey. We found that spiders used the same strategy which consisted of biting the prey repeatedly, and occasionally wrapping it, suggesting that cribellate silk acts as an effective immobilisation mechanism against the prey. When comparing the acceptance, all prey were accepted in proportions higher than 50%, suggesting generalist habits for this species, and indicating that the web also plays an important role when capturing different prey.

Poster presentation.

COMPOSICIÓN DE LA COMUNIDAD DE ARAÑAS PRESENTES EN CULTIVOS ECOLOGICOS DE NARANJA DE COPACABANA, COLOMBIA

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En Colombia, productores de naranja a pequeña escala han apostado por una producción ecológica, libre de agroquímicos, valiéndose del control biológico a partir de enemigos naturales de plagas. Las arañas como depredadores generalistas han demostrado su eficacia, frente a otros agentes de control. Analizar la araneofauna en estos cultivos, es un primer paso para comprender cómo la comunidad de arañas interactúa con el resto de la artropofauna. En este estudio, se caracteriza la comunidad de arañas en cultivos ecológicos de naranja, en parcelas con diferencias en cuanto a la pendiente del suelo, y las especies vegetales acompañantes del cultivo, como otros cítricos, café y hortalizas. Se proporciona una lista de las principales especies de arañas encontradas en este cultivo, familias y grupos funcionales mayormente representados. Se encuentra que la diversidad de arañas es similar entre los sitios muestreados, el grupo funcional mayormente representado fue "Otros cazadores", en donde de las 26 familias encontradas, Salticidae y la especie *Chira Spinosa* fueron los más abundantes. Así mismo, el terreno con mayor pendiente presentó más "Errantes del suelo", en especial arañas de la familia Ctenidae. Se concluye que, aunque en estos agroescosistemas, existen diferencias en las especies vegetales acompañantes, la generación de microhábitats heterogéneos permite la instalación de los distintos grupos funcionales disponibles en la zona, dentro del sistema agrícola. Sin embargo, características como la pendiente del suelo, merecen mayores estudios, para evaluar su implicación en la diversidad de arañas y sus zonas de forrajeo.

Poster presentation.

FIVE NEW SPECIES OF ZALMOXIDAE (OPILIONES: LANIATORES: ZALMOXOIDEA) FROM PERU, A MORPHOLOGY APPROACH

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Zalmoxidae is the most diverse family of Zalmoxoidea. Up to day has been described a total of 61 genera and 223 valid species worldwide and 111 of them inhabit South America. It is a neglected group with early studies in this region. Particularly, in Peru the diversity of these harvestmen is very underestimated with only six species described by C. F. Roewer between 1949 y 1963, and without any new addition more than 50 years later. Furthermore, the taxonomic knowledge of these species is very poor and outdated because they are all known only by the original brief description, some without even a single drawing, and none with a description of the important male genital morphology. To contribute to the knowledge of Zalmoxidae in Peru, material from the Museo de Historia Natural (UNMSM), Lima, Perú, was reviewed. Five new species from three localities are detailed described based on external morphology and male genitalia. The results show that all the new species exhibit external sexual dimorphism. Some morphological characters such as the length, thickness, and legs IV armature, the eye mound, *pars basalis*, *stragulum*, and *rutrum* shapes represent diagnostic characters. Remarkable convergence cases were found in Río Samiria (Loreto), where two sympatric Zalmoxids species are externally very similar to one undescribed Samooidea, and only the male genitalia provide reliable characters for the correct familiar allocation. The systematic position of the new zalmoxids amid the huge knowledge gaps and the implications of the new findings are discussed.

Poster presentation.

ABILITY OF *Bothriurus bonariensis* (SCORPIONS: BOTHRIURIDAE) TO DETECT CHEMICAL SIGNALS OF INSECTICIDE IN SUBSTRATE

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Conventional agricultural production based on the great demand for agrochemicals and their excessive uses not only affect the target species but also beneficial fauna, including scorpions. The scarcity of scorpions in conventional production systems would be related to the sensitivity these arachnids could have to the products used within the integrated pest management (IPM). It is intended to evaluate the sensitivity in the laboratory of *Bothriurus bonariensis* towards a broad-spectrum insecticide (thiamethoxan + lambda-cyhalothrin) at topical and residual level with lower concentrations than those recommended for crops (25%, 10%, 5%), due to the high mortality of individuals. Topical exposure was recorded at 30 min, 24h and 48h post-treatment, the variables of survival and acceptance were measured. Registered residual exposure in the preference of the scorpions with insecticide *vs.* control was for 120 minutes. Half of the treated filter paper disc was placed in each arena, while the other half corresponded to the control filter paper. Sublethal effects were observed with the insecticide at the topical level at 25% and 10% concentrations, but not at 5%. At residual level, with the insecticide at 25% the scorpions presented a greater mobility towards the control substrate (73.6% $H_{(insecticide25\%)}$=74.48, P<0.005), the same as at concentrations of 10% (control 66.6% $H_{(insecticide10\%)}$=25.88, P=0.356). In comparison, at 5%, the preference was 50.6% ($H_{(insecticide5\%)}$=22.0869, P=0.574). These results confirm that scorpions can detect substances or chemical residues on substrates and can be considered possible bioindicators of soil quality due to their high sensitivity.

Poster presentation.

PHENOLOGY AND SPATIAL DISTRIBUTION OF *Latrodectus corallinus* IN A HIGH ANDEAN AREA OF PERU

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Spiders of the genus *Latrodectus* are considered a group of medical relevance in Latin America, responsible for accidents due to latrodectism. The knowledge of some species of this group is extensive in some South American countries such as Argentina or Brazil, but their biology in other countries has been little explored. The phenology of the species *Latrodectus corallinus*, present in the high Andean area of Cuzco, Peru, as well as the effect of altitude on its phenology (3925 – 4077 meters above sea level) was analyzed. Samples were taken every four months for two years, from adults, juveniles and egg sacs in the Andean community of Uchuccarco (Cuzco). Regarding phenology, a significantly higher number of adult specimens was found in June, in the case of egg sacs it was during December; which may suggest that both moments would correspond to the mating and oviposition periods, respectively. On the other hand, a significant association was found between altitude with the abundance of specimens and egg sacs, perhaps corresponding to some physiological adaptations, as well as habitat changes due to human activity. Considering that this is the main species of spider of medical interest in Uchuccarco, these data could serve as a basis to prevent accidents, taking as a reference the periods of greatest abundance of adult females. These results would be showing the habitat preference of the species. Accident frequency could be evaluated by combining habitat preference, phenology and human mining activity.

Poster presentation.

ECOTOXICOLOGICAL EFFECTS OF GLYPHOSATE HERBICIDE ON WEB SPIDERS

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In nature, predatory arthropods can be affected by pesticides directly or indirectly through residues or consumption of contaminated prey. The herbicide glyphosate is widely used on different crops, for the control of weeds. At present, there is a great deal of controversy about the negative effects of this herbicide on non-target organisms, since there are few studies in this regard, particularly related to arthropods. The objective of the study was to determine, under laboratory conditions, the ecotoxicological effects of the herbicide glyphosate on the orb-weaver spider *Alpaida veniliae* (Araneae, Araneidae). The herbicide was administered orally through the prey (*Musca domestica*) treated by immersion. Six replicates of 10 adult virgin female spiders were made per treatment. The prey was fed for four consecutive days (chronic toxicity). The percentage consumption of the prey treated with the herbicide was lower than the control treatment. The herbicide delayed the web building 17 days after control treatment, and caused defects in its construction and structure. Ovarian development, egg-sac construction and formation of egg masses were affected by the herbicide, as well the decrease in fecundity and fertility, reducing their predatory role and their potential as a natural enemy of pests in different agroecosystems.

Poster presentation.

EFFECT OF PESTICIDES ON THE DEVELOPMENT OF OOCYTES AND SAC EGGS OF *Alpaida veniliae* (ARANEAE, ARANEIDAE)

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Transgenic crops and their expansion have generated a significant increase in the use of broadspectrum pesticides, which are very toxic for most natural enemies, especially arachnids. *Alpaida veniliae* (Araneae, Araneidae) is a weaver spider, abundant in soybean and rice crops, and feed on many insect pests. Sublethal effects of various pesticides (cypermethrin, endosulfan, spinosad, methoxyfenozide) and the herbicide glyphosate on the development of oocytes, the sac eggs and eggs were evaluated. Sublethal concentrations of the products were applied by ingestion of *Musca domestica* treated by immersion. The prey was provided for 4 consecutive days. After 21 days post-treatment females were mated, and the dissection of the ovaries was conducted 15 days post-copulation. There was an abnormal development of oocytes in cypermethrin, endosulfan, spinosad and glyphosate treatments compared to the control group, with a smaller development and the presence of fat aggregates. The egg sac building of was also abnormal in these treatments. Some of the eggs were found in poor condition or dehydrated. Methoxyfenozide had no effect on the development oocytes and sacs eggs. The results show a negative impact of sublethal concentrations of many insecticides, two of them belonging to conventional pesticides and the herbicide glyphosate on *A. veniliae*. This study shows that not only important to assess mortality, but other aspects related to performance, such as fertility, which are directly linked to its effectiveness for pest control.

Poster presentation.

TOXICITY OF METHOXYFENOZIDE ON THE ORB-WEB SPIDER *Alpaida veniliae* (ARANEAE, ARANEIDAE): CYTOTOXICITY IN OVARIES

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Alpaida veniliae is one of the most abundant spider species of the orb web weaver guild, in addition to its high abundance, its biological and ecological attributes point out the importance of conservation this predator as a natural enemy of many several soybean crop pests. But excessive use of pesticides plays a negative role for them. Insect growth regulator (IGR) has proven to be effective and selective for natural enemies. The selectivity of the insecticide methoxyfenocide (IGR) we evaluated on *A. veniliae*, negatively affecting survival, web building, prey consumption, mating, and female productive capacity. Non-mortality was registered along the 96 h post treatment. Prey consumption was not significantly different between treatments. Females treated with methoxyfenozide began web building 9 days later than the control (31.7% failed to build). Egg-sacs and egg-masses number abnormal (desiccated, rotten) in each oviposition, well as total abnormal ovipositions were significantly greater in the methoxyfenozide treatment than in control. Fecundity and fertility were adversely affected by methoxyfenozide. Through dissection of ovaries of methoxyfenozide-treated spiders, it was observed that the distribution of mature oocites was random with respect to the control. Mean oocyte diameter was significantly lower in the methoxyfenozide treatment 15 days after mating. Mature oocytes of control spiders exhibited large granules in the cytoplasm, ribosomes, endoplasmic reticulum, lipidics bodies, vitellinic membrane, and chorionic membrane; with methoxyfenozide, they showed a substantial cell disruption and many inactive cells. This study provides new insights into the side effects of insecticide methoxyfenozide on biological aspects of the spider *A. veniliae*.

Poster presentation.

SELECCIÓN Y EVALUACION DE UNA ARAÑA COMO POTENCIAL CONTROLADOR BIOLOGICO EN CULTIVOS ECOLOGICOS DE NARANJA EN COPACABANA

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En Colombia, el cultivo de naranja, al igual que el de otros cítricos es fuertemente impactado por la aplicación de pesticidas, esto ha causado una progresiva resistencia de las plagas. Como alternativa, los productores a pequeña escala utilizan herramientas agroecológicas, y entre ellas al control biológico. Las arañas, como depredadores generalistas han sido estudiadas como posibles agentes de control. Pero como depredadores generalistas, las arañas pueden afectar también fauna benéfica, siendo necesarios estudios a nivel especifico, que evalúen su efecto de manera individual. Para ello, se eligió a la especie *Chira spinosa* como modelo, según diversos criterios como su tamaño similar a las especies presa, sus picos de actividad diurnos al igual que las principales especies plaga y su alta abundancia en el sitio de estudio. Se evaluó su preferencia alimenticia sobre 3 especies benéficas, 3 plagas y 3 neutras (ni afectan ni favorecen al cultivo), encontradas abundantemente dentro de los cultivos. Como resultado, Las presas más aceptadas fueron los grillos de antenas largas del género *Conocephalus* y los lepidópteros de las familias Gracillariidae y Crambidae, con tasas de aceptación del 67% y el 87% respectivamente, ambas presas catalogadas como plaga. Se realizaron también, observaciones interesantes sobre el comportamiento evitativo por parte de las arañas, hacia presas como abejas y mariquitas y bajo consumo de las especies catalogadas como neutras Se concluye que, Chira spinosa tiene un alto potencial como controlador biológico dentro de los cultivos de naranja, siendo necesarios estudios en campo para evaluar a plenitud su nicho trófico.

Poster presentation.

HOST RANGE AND SEX DETERMINATION OF SPIDER ECTOPARASITOID, *Minagenia* sp. (HYMENOPTERA, POMPILIDAE)

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Wasps of the genus *Minagenia* have developed koinobionism as a unique life strategy within the family Pompilidae. Unlike most idiobiont pompylids, *Minagenia* is very specific to the genus *Lycosa* (Araneae, Lycosidae), namely *L. u-album*, *L. erythrognatha* and *L. poliostoma*, with an incidence of parasitism of 18.9%, 15.8 % and 12.5%, respectively. The duration and size were recorded for development stages which were clearly identifiable in all parasitoids reared in the laboratory (N=22) for reared wasps, we also compared the duration of each instar (larval, pupal and imago until death) between males and females. Ecological and taxonomic traits of the host determine selection and sex allocation of female *Minagenia* wasps. The last larval stage of *Minagenia* induces behavioral changes in its hosts. The manipulated spider constructs a protective chamber of silk as a refuge for the pupation of the parasitoid. Our results suggest that host manipulation appears to be closely related to koinobiont lifestyle, through the order Hymenoptera. This study provides new observations at the field and laboratory level, about the life strategy of this type of wasp, which probably arose convergently in distant taxonomic groups within the family Pompilidae.

Poster presentation.

EFFECTS OF A BROAD-SPECTRUM INSECTICIDE ON THE NANOSTRUCTURE AND MECHANICAL PROPERTIES OF *Parawixia audax* (ARANEAE, ARANEIDAE) SPIDER SILK

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Parawixia audax (Araneae, Araneidae) captures its prey using its web, changes in the composition and way of building can influence its role as a natural enemy of pests in soybean crops. The effects of topical exposure in the spider *P. audax*, on web building and the nanostructure of the silk thread, at a sub-lethal concentration of a broad-spectrum insecticide (thiamethoxan + lambda-cyhalothrin) were evaluated. We used spiders exposed to the insecticide (1.41 mg/l, 5% of the maximum concentration recommended in the field) and control non-exposed spiders to compare the webs building. Silk was collected from the major ampullate gland, subjected to tensile tests and amino acid composition analysis. 53% of spiders exposed to the insecticide did not regular build webs, building irregular webs with few coils. The mechanical properties, nanostructures and amino acid composition of silk were significantly affected. Proline, glutamine, alanine, and glycine compositions in silk differed between treatments, indicating that insecticide exposure induced down regulation of the silk protein MaSp2. Control treatment spiders had stronger, more resistant and extensible silks than those treated with the insecticide. The changes in the physicochemical properties of the silk and the deterioration of the web building affect the preys capture, reducing its role as a factor of mortality of pests in agroecosystems.

Poster presentation.

SALINITY EFFECT ON ACTIVITY IN A WOLF SPIDER: *Allocosa senex*

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Osmoregulation is an energetically expensive function, so individuals can compensate changes in salinity through behavior. *Allocosa senex*, is a wolf spider that inhabits the oceanic, estuarine, and fluvial sandy coasts of Uruguay. The goal of this work was to analyze the exploration behavior of *A. senex* females. To analyze this behavior, we used 152 *A. senex* females –the wandering sex—from two beaches with different salinities, one from a riverside beach, and other from an oceanic-influenced beach were exposed to different salinity conditions. They were assigned to different salinity treatments, using sand saturated with salt dissolved in distillated water ($0^0/_{00}$, $35^0/_{00}$ and $70^0/_{00}$), with and without access to the substrate for 21 days. Individuals were placed in a circular arena with sand and the activity was recorded during 30 minutes on days 8 and 21. To estimate activity time, we used Fiji - Image J software. Spiders of both beaches with access to the substrate on day 8 exposed to higher salinities ($70^0/_{00}$ and $35^0/_{00}$) exhibited higher levels of activity than spiders exposed to ($0^0/_{00}$). On the other hand, the effect of higher salinities in females without access to the substrate was observed later (day 21). The effect of salinity was greater when the individuals had access to the substrate, this could be due to an exploratory behavior in which the individuals traveled through all the arena searching for an environment with lower salinity.

Poster presentation.

A NEW SPECIES OF *Pinelema* WANG & LI, 2012, A RELICTUAL TROGLOMORPHIC TELEMID INHABITING CAVES IN BRAZIL (ARANEAE, TELEMIDAE)

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The Telemidae are a small family of spiders, with 16 genera and about 100 species distributed mainly in Africa and Asia but little represented in Europe. In the Americas, only six species in three genera are known: *Usofila* Keyserling, 1891 with four species, restricted to the USA; *Telema* Simon, 1882 with a single species in Central America, *T. mayana* Gertsch, 1973, from Guatemala, and the monotypic genus *Kinku* Dupérré & Tapia, 2015, proposed from Ecuador. Here we report the first species of the family from Brazil, discovered in caves in the Serra do Ramalho karst area, in the state of Bahia, northeast of the country. It is a troglobitic species of the genus *Pinelema* Wang & Li, 2012. This genus occurs in China, Laos, and Vietnam in the Asian region. Herein, we are increasing the distribution of the genus and this species is certainly a relict of Telemidae family from caves of the northeastern Brazil. It has typical troglomorphic characteristics, such as the absence of eyes, long and very thin legs, and pale and almost depigmented somatic coloration. Detailed data on the sexual structures of the species and data on the natural history of the populations of four caves of the state of Bahia are presented. In this area, more than 100 specimens were observed. The spiders were only found in aphotic zones of the caves with high relative humidity. Sometimes we found up to 10 spiders near each other but they were always solitary on their webs.

Auxilio: CNPq, IABS.

Poster presentation.

MOLECULAR PHYLOGENY OF *Euagrus* FUNNEL-WEB SPIDERS (MYGALOMORPHAE: EUAGRIDAE)

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The funnel-web spider genus *Euagrus* Ausserer, 1875, from the Euagridae family (former Dipluridae), comprises 20 described species distributed from the southern United States to Costa Rica. This group of spiders represent an effective model to test evolutionary or biogeographic hypotheses due to: 1) their low-dispersal abilities; 2) the diversity of habitats where they can be found - ranging from deserts and tropical forests to caves and high-altitude coniferous forests; and 3) the striking morphological adaptations of some species, including eyeless troglomorphs or extreme appendage elongation. Since its morphological revision 1988, the genus has received very little attention. Here, we present the first molecular phylogeny of *Euagrus* based on UCE (Ultraconserved Elements) phylogenomic data, including 5 of the 20 known species. Our preliminary results suggest the possibility of *E. chisoseus* Gertsch, 1939 to be a species complex rather than a single species. The phylogeny and niche modeling analyses indicate a divergence between the lowland clade from Texas and the ‘sky island' clade from Arizona and New Mexico. Future sampling will yield a taxonomic revision of the genus. The main aims of the project are to: 1) add more species data to determine the phylogenetic relationships within the genus; and 2) sample exhaustively the Madrean Sky Islands (65 defined mountain ranges from southeastern Arizona, southwestern New Mexico, and northern Sonora) to understand their biodiversity and historical biogeography.

Poster presentation.

PREFERRING THE NEW ONE: RECOGNITION OF PREVIOUS MATES IN A SPIDER

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Individuals can benefit by mating with different mates, females through genetic benefits for their offspring, and males by increasing the number of offspring. Thus, the ability to identify new partners should increase their fitness. Here we aimed to determine if individuals of *Holocnemus pluchei* (Pholcidae), a promiscuous species with post-copulatory mate guarding, can recognize their previous mates. We expect a lower frequency of re-copulation and behavioral variations in re-copulations with the same mates. We compared the frequency of remating and sexual behavior of individuals with the same and different mates. Considering that mate recognition may occur during copulation or the post-copulatory guarding period, we analyzed the following groups: 1) the pair copulates, and the male is removed; no post-copulatory guarding is allowed. This male is placed again next to the same female after 24 hours. 2) the pair copulates, and the male performs post-copulatory guarding and is removed; then, this male is placed next to the same female after 24 hours. 3) the pair copulates; the male performs post-copulatory guarding and is removed; another male is placed next to that female after 24 hours. When males do not perform post-copulatory guarding, the re-copulation with the same female lasts a few minutes; the female does not accept to continue. When the males perform post-copulatory guarding, they do not try to re-copulate with the same female. When the female copulates with two different males, re-copulations occur in all cases. Our results indicate recognition of the previous mate by both sexes.

Poster presentation.

Megaraneus: A NEW CASE OF EXTREME SEXUAL SIZE DIMORPHISM IN ARANEID SPIDERS

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Field research in little-explored regions such as parts of Africa promises the discovery of new or rare and poorly understood arachnids. Original descriptions of enigmatic species are often basic, lacking morphological details and assessment of variation. In spiders, numerous such taxa are yet to be placed phylogenetically, and their natural history remains unknown. In effect, such taxa are only placeholders in the catalogue, and there is a need to systematically uncover their taxonomic validity, document their biology, and interpret their evolutionary histories. During our fieldwork in South Africa, we documented the natural history of a conspicuous but poorly known araneid *Megaraneus gabonensis*. Our measurements of both sexes revealed a female to male size ratio of around 4. According to the literature, this ratio constitutes extreme sexual size dimorphism (eSSD). In araneid spiders, eSSD has evolved multiple times, but since *Megaraneus* has never been phylogenetically placed, we pose the question whether the eSSD evolution in *Megaraneus* is independent from the documented cases. We report on the phylogenetic test of this hypothesis using classical markers in an expanded araneid phylogenetic matrix. This test will have taxonomic implications and will elucidate *Megaraneus* eSSD in an evolutionary context.

Poster presentation.

A NEW GENUS OF HETEROPODINAE SPIDERS FROM NORTHERN SOUTH AMERICA (ARANEAE: SPARASSIDAE)

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A new genus of Sparassidae spiders is proposed to include nine new species, the type species, sp. nov. H (male, female) from Brazil, sp. nov. D (male) and sp. nov. E (male, female), from Brazil, sp. nov. A (male), sp. nov. B (male, female), sp. nov. C (male), sp. nov. G (male female) and sp. nov. I (male, female) from Colombia, and sp. nov. F (male) from Peru. The genus is included in the subfamily Heteropodinae due to the presence of intermarginal denticles in the chelicerae; a long toothed female palpal claw, two recurved eye rows with median eyes smaller than laterals, and only one lateral spine on each side of metatarsi I−II, as well as a ventral tibial apophysis (VTA), and a ventral branch on the RTA (vRTA) in the male palps. Within Heteropodinae, it seems to be more closely related to *Guadana* Rheims and *Sparianthina* Banks due to the presence of intermarginal denticles along the entire cheliceral groove, and a sickle-shaped dorsal tegular apophysis (DTA) in the male palp. They are distinguished from both genera by the palps with filiform embolus, projection at the base of embolus hyaline, and by the epigyne with lateral lobes medially fused. All species are described and illustrated. An identification key and distribution map is provided for all species of the genus.

Poster presentation.

REVISÃO TAXONÔMICA DO GÊNERO *Tetragnatha* (ARACHNIDA: ARANEAE: TETRAGNATHIDAE) NO BRASIL E ARGENTINA.

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Tetragnatha Latreille, 1804 é um gênero cosmopolita, com 324 espécies/subespécies descritas (World Spider Catalog 2022), sendo o grupo com o maior número de espécies dentro da família Tetragnathidae. São aranhas orbitelas com grandes quelíceras, que tem como centro de distribuição a zona tropical e subtropical. Além disso, as aranhas deste gênero são encontradas na vegetação com suas teias horizontais para a captura de presas. O caráter taxonômico mais importante para identificação das espécies é a morfologia das quelíceras, especialmente a dos machos. Nossos resultados indicaram a presença de 20 espécies do gênero para o Brasil e 13 espécies para a Argentina. O presente estudo trata de uma revisão taxonômica para os dois países, com quatro novas espécies descritas: *Tetragnatha cristata* sp. nov. (Brasil e Argentina); *T. didorata* sp. nov. (Brasil); *T. oncognatha* sp. nov. (Brasil); e *T. pradoi* sp. nov. (Brasil e Argentina). A fêmea de *T. cladognatha* Bertkau, 1880 foi redescrita e um neótipo foi proposto, o macho também foi descrito pela primeira vez. Também atualizamos o status taxonômico das seguintes espécies: *Tetragnatha labialis* Nicolet, 1849 e *T. americana* Simon, 1896 que foram consideradas sinonímias de *T. nitens* (Audouin, 1826); e propusemos *Tetragnatha bishopi* Caporiacco, 1947, *T. linearis* Nicolet, 1849, *T. similis* Nicolet, 1849 e *T. sternalis* Nicolet, 1849 como *nomina dubia* devido ao material tipo faltante ou composto por jovens apenas. Além disso, uma chave foi fornecida para as 21 espécies argentinas e brasileiras estudadas.

Poster presentation.

SLOWER THAN ROCKS: EVOLUTIONARY MOVEMENT OF LOW-DISPERSAL SPIDERS ACROSS THE WESTERN NEARCTIC

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The persistence of ancient lineages on Earth presents the opportunity to study many different questions concerning how species spread, diverge, and adapt across space and time. Some lineages which persist over long periods of time change seemly little in overall appearance and behavior, suggesting that they have constraints on their phenotypic diversity. For animals that disperse poorly across generational time and have specific environmental preferences, then these constraints are potentially connected to environmental pressures. Such a group would be useful for asking broad questions about how the environment influences biological diversity and how species react to changing environments because the of the close association with environmental pressures would magnify the impact the landscape has had on the evolution of these species. Folding trapdoor spiders (the genus *Antrodiaetus*) are relatively long living spiders that disperse poorly and possess a conserved morphology, whose specific habitat preferences mean that their distribution is dictated by the availability of suitable habitat which can change drastically over geological time. Focusing on species in the Pacific Northwest, we present current results of research to describe the phylogenetic relationships of western Nearctic species and characterize the true diversity of *Antrodiaetus*, and in turn understand how geographic forces have shaped biological diversity in the group.

Poster presentation.

TOURISM FACILITATES EXTRA-RANGE DISPERSION OF NON-NATIVE ARANEID SPIDER IN THE GALÁPAGOS ISLANDS, ECUADOR

Cisneros, Diego; Peñaherrera, Emilia; Domínguez, Mariela; Guerrero, Tomas & Die, Daniel.

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About one thousand kilometers have been an important barrier for dispersion of mainland fauna to the Galapagos islands. Increasing tourism since the 1980's has created a growing colonization pathway for species to arrive to Galapagos islands, not just from mainland but also from further distant locations. An important issue restricting our understanding of extra-range dispersions in spiders in Galapagos is the limited information on their diversity and distribution in each island of the archipelago. Since 2019, we have conducted surveys of spiders of the family Araneidae in San Cristobal Island, the westernmost island of Galapagos. We have collected four species previously unreported in Galapagos, including one species native to North America. The purpose of this presentation is to discuss about the patterns of extra-range dispersion of non-native Araneidae and their potential impacts, analyzing the role that touristic and private vessels had on the introduction of this new Araneidae species.

Poster presentation.

COMPORTAMIENTO ALOMATERNAL EN *Anelosimus vierae* (ARANEAE, THERIDIIDAE).

da Rocha Dias, Maria de Fátima[1,2]; Vasconcellos-Neto, João[4] & Viera, Carmen[2,3].

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La mayoría de las arañas permanecen agregadas al inicio de su vida, pero algunas especies extienden el cuidado maternal, formando sociedades. La inversión maternal y la cooperación varían con el grado de socialidad. Los cuidados alomaternales han sido registrados en arañas sociales, pero, observaciones preliminares indican que ocurre también en arañas subsociales. Estudiamos el cuidado alomaternal en hembras de *Anelosimus vierae* de diferentes estatus reproductivos. Fueron utilizadas 23 hembras de *Anelosimus vierae* que se mantuvieron en cajas de Petri, alimentándose semanalmente con *Drosophila* spp. a temperatura promedio de 25ºC y 50-60% de humedad. Experimento 1: se usaron 10 hembras vírgenes y 10 lotes de crías con aproximadamente 1 mes de vida, registrándose 2 alimentaciones. Las mismas hembras fueron copuladas y reutilizadas con otras crías de la misma edad. Experimento 2: se usaron 6 hembras con sus crías, separando las hembras de sus crías después de una alimentación. Luego se cambiaron crías propias por ajenas de la misma edad, durante dos semanas y se observó alimentación. El grupo control fue: 7 hembras con crías nacidas en laboratorio que permanecieron juntas todo el experimento. Se grabaron las conductas durante una hora en cada alimentación semanal. Los resultados muestran que en *A. vierae* el cuidado maternal de las crías está ligado al estatus reproductivo de las hembras. Las hembras vírgenes y copuladas sin crías no alimentan crías ajenas, mientras que hembras con crías, no discriminan, alimentando crías propias y ajenas. Esta conducta puede favorecer el aumento de la socialidad.

Poster presentation.

AN OPILIONES-SPECIFIC ULTRACONSERVED ELEMENT PROBE SET WITH A NEAR-COMPLETE FAMILY-LEVEL PHYLOGENY

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Sequence capture phylogenomics, especially of ultraconserved elements (UCEs), has become a popular approach for phylogenetic and evolutionary analyses, showing utility across a broad range of time scales and evolutionary divergences. Given the ancient divergences of arachnids, dating to at least 500 mya, the Arachnida probe set spans some of the deepest divergences covered by any UCE probe set to date. While the Arachnida probe set will continue to be useful in many arachnid lineages, it is limited in terms of the number of loci targeted (1120 loci) relative to other arthropod probe sets. Creating a probe set based on a more inclusive lineage increases specificity of the probes and the total number of loci targeted, as shown with a more specific probe set developed for Araneae, which targets almost twice as many UCEs as the Arachnida probe set. Here, we designed and tested an Opiliones specific probe set, paying special attention to historical specimens with degraded DNA, and to "backwards compatibility" with the Arachnida probe set. Using this newly developed Opiliones-specific probe set, we reconstruct a family-level phylogeny that includes nearly all currently described Opiliones families, and demonstrate the utility of the probe set to species and population-level divergences.

Poster presentation.

COMMUNITY OF SPIDERS IN BELL PEPPER CROP (*Capsicum annuum*) IN GREENHOUSES, WITH CONVENTIONAL SYSTEMS AND IN AGROECOLOGICAL TRANSITION

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The production of bell pepper crop (*Capsicum annuum*) is important in Uruguay, 3.8%. A differential characteristic is its development in greenhouses. We compared the variation in the composition, abundance and importance of the araneofauna in bell pepper crops in greenhouses, with conventional agricultural system management (SAC) and in agroecological transition (SATA). The work was carried out in Bella Unión, Artigas (Uruguay). It was sampled in the greenhouses and in the surrounding vegetation. In greenhouses, 117 species (SATA: 108, SAC: 72) were found, with 62 species in common, the most frequent families were Linyphiidae and Lycosidae. A greater diversity was obtained according to Margalef in SATA (Mg=14.58) compared to SAC (Mg=12.1). The similarity between both agricultural systems according to Sørensen was 70%. The vegetation surrounding the greenhouses of both systems presented 160 species (SATA: 139, SAC: 130), with 107 species in common, belonging to the families Oxyopidae, Linyphiidae, Theridiidae and Lycosidae. The greatest diversity according to Margalef was in SATA (16.25) than in SAC (16.18). The similarity between the surrounding vegetation of both agricultural systems according to Sørensen was 82.9%. The variation in composition, abundance and diversity of the araneofauna could be affected, depending on the agricultural system analyzed, being the SAC the one that presents an imbalance at the trophic level. Bearing in mind that the use of pesticides would be affecting spiders as natural enemies. It has been shown that the agroecological system and the adjacent vegetation contribute to the araneofauna of the crop and maintain pest control.

Poster presentation.

ECOTOXICOLOGICAL EFFECTS ON SPIDERS OF THREE PESTICIDES USED IN GREENHOUSES OF BELL PEPER CROP (*Capsicum annuum*)

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The use of various pesticides to control pests and diseases in crops not only has an action on them, but also on all the accompanying beneficial fauna. Here we evaluated the lethal and sublethal effects of three pesticides used in bell peppers crop in greenhouses, using native spiders as a model. Residual and topical bioassays were performed with a biorational insecticide (matrine), fungicide (flutriafol) and herbicide (glyphosate); on *Oxyopessalticus* (Oxyopidae), *Falconinagracilis* (Corinnidae), *Sumampattus* sp. (Salticidae) and *Aysha* sp. (Anyphaenidae). Four behavioral variables were analyzed: recognition (R), erratic movements (EM), quiescence (Q) and grooming (G). At residual level *Sumampattus* sp. proved to be more sensitive in the R variable, presenting significant differences (P>0.05) in the three pesticides (83.2% with flutriafol, 80.8% with matrine and 66.7% with glyphosate). *O. salticus* presented a higher proportion of individuals with EM under the effects of flutriafol (41.67% P>0.05) while *Sumampattus* sp. presented a higher proportion under the effects of flutriafol (35% P>0.05). Mortality by contact with matrine was observed at 72h (33.3% P>0.05) in *O. salticus*, presenting a higher proportion of EM at 24h with matrine and flutriafol (95.83%, 87.5%, P>0.05). *F. gracilis* presented ME 48h after flutriafol treatment (33.33% P>0.05) and subsequent IV leg paralysis (62.5%, P>0.05).The results provide an approach to the knowledge of the effects of flutriafol, matrine and glyphosate on the behavior of spiders, altering the possible biological control.

Poster presentation.

LIMITATIONS OF SPERM TRANSFER IN SPIDERS - COEVOLUTION OF MORPHOLOGY AND BEHAVIOUR

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Sperm transfer in spiders is limited by both morphology and behaviour. Males transfer their sperm via secondary copulatory structures, the pedipalps. Sperm are not mobile at that stage and the ejaculate needs to move through narrow male and female ducts to until it reaches the female sperm storage organ. In many Argiope species of spiders, copulation duration can be very short (few seconds), and males are attacked and cannibalised during mating and if they survive, their pedipalps might be damaged, limiting life-time mating opportunities. In this context, we investigate how the behaviours that limit sperm transfer time (cannibalism, copulation duration) are related to the morphology of sperm, copulatory ducts and spermatheca. We predict that the number of sperm transferred is affected by overall copulation duration, duct size, sperm size and size of spermatheca. We test these relationships in an orb-web genus, *Argiope*, which is common and species diverse in Australia. We will present our preliminary results from *Argiope picta*, *Argiope aetheria* and *Argiope keyserlingi.* Which is diverse in morphology and behaviour.

Poster presentation.

SUDANESE SPIDERS (ARANEAE) IN THE NATIONAL MUSEUM IN PRAGUE (CZECH REPUBLIC)

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Spider fauna of Sudan is poorly studied. Recently, Manal Siyam and Jason Dunlop reviewed the Sudanese spider fauna and added some new records. Their activity inspired me to work with the collection of Sudanese spiders housed in the National Museum in Prague (NMP). The spiders were collected during the entomological expeditions of Czech heteropterologist Prof. Pavel Štys (1933–2018). He collected the spiders at 30 Sudanese localities between 1965 and 1968. They include 194 specimens belonging to 23 families (represented genera are given in parentheses): Filistatidae (*Afrofilistata*), Scytodidae (*Scytodes*), Pholcidae (*Artema*, *Pholcus*), Oonopidae (gen. undet.), Eresidae (*Stegodyphus*), Oecobiidae (*Uroctea*), Hersiliidae (*Hersilia*), Uloboridae (*Uloborus*), Theridiidae (*Ariamnes*, *Theridion*-group), Tetragnathidae (*Tetragnatha*), Araneidae (*Argiope*, *Neoscona*), Lycosidae (*Arctosa*, *Hogna*, *Pardosa*, *Trochosa*), Pisauridae (gen. undet.), Oxyopidae (*Oxyopes*, *Peucetia*), Dictynidae (*Nigma*), Cheiracanthiidae (*Cheiracanthium*), Corinnidae (gen. undet.), Gnaphosidae (*Haplodrassus*, *Micaria*), Selenopidae (*Selenops*), Sparassidae (*Eusparassus*), Philodromidae (*Thanatus*), Thomisidae (*Monaeses*, *Thomisus*) and Salticidae (*Heliophanillus*, *Menemerus*, *Mexcala*, *Myrmarachne*, *Plexippus*, *Thyene*). Among them, several species from the genera *Ariamnes*, *Haplodrassus*, *Micaria* and *Pholcus* and even one family (Scytodidae) are new to the spider fauna of Sudan. Those arachnologists interested in tropical African spiders are thus invited to cooperate on processing of this material. This work was financially supported by the Ministry of Culture of the Czech Republic (DKRVO 2019–2023/6.I.d–e, National Museum, 00023272).

Poster presentation.

DIVERSIDAD DE LA FAMILIA ARANEIDAE EN ÁREAS CONSERVADAS E INTERVENIDAS DEL NOROCCIDENTE DE ECUADOR

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El Chocó Andino del Ecuador se caracteriza por ser una de las zonas más biodiversas del país, sin embargo, se han realizado pocos estudios relacionados con invertebrados en esta área. La familia Araneidae es uno de los grupos con mayor riqueza de especies dentro de la clase Arachnida, con más de 3100 especies descritas en 186 géneros a nivel mundial. El presente estudio se realizó en bosques tropicales piemontanos de la Cordillera Occidental de los Andes, en las provincias de Imbabura y Pichincha, entre agosto del 2019 y febrero del 2020. Se realizaron colecciones intensivas de arañas en cinco localidades caracterizadas por tener diferentes grados de intervención antropogénica de su hábitat, incluyendo bosques maduros, bosques secundarios, plantaciones, pastizales y vegetación en áreas asentamientos humanos. Los análisis de la riqueza y abundancia de las comunidades de especies de la familia Araneidae muestran que existe una composición de especies diferente en zonas aledañas a plantaciones y asentamientos humanos, en comparación con bosques maduros y secundarios. Se obtuvo un total de 10 especies en zonas disturbadas y en zonas de bosque, sin embargo, géneros como: *Witica, Eriophora y Verrucosa* solo se encontraron en zonas antropizadas mientras que géneros como: *Mangora, Bertrana e Hypognatha* solo se encontraron en zonas de bosque. En cuanto a la abundancia, se encontró un total de 113 individuos para zonas de bosque y 129 individuos para zonas aledañas a asentamientos humanos. Géneros como *Bertrana* e *Hypognatha* se han localizado dentro de este estudio únicamente en bosques bien conservados, sugiriendo que tienen poca capacidad de adaptación a cambios de hábitat. Especies como *Witica* cf. *crassicauda*, corresponden a nuevos registros que expanden su distribución hacia el Chocó Andino o para el Ecuador.

Poster presentation.

RESOLVING THE TEXTBOOK SCORPION: PHYLOGENETICS OF THE SCORPION GENUS *Paruroctonus* WERNER, 1934

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Scorpions have been a frequent target of interest within and outside of the scientific research community. Scorpions belonging to the *Paruroctonus* genus, one of 17 described genera within the family Vaejovidae, range broadly from the southwestern United States to Canada. Scorpions in the genus exhibit both hyper-endemism in extreme habitats like alaline flats and sand dunes, and extremely wide ranges distributed across multiple ecosystems. One example of this geological spread is *Paruroctonus boreus* (Girard, 1854), the northernmost distributed scorpion in the world. Despite species within this genus frequently being used as a model for a wide range of scorpion ecology and physiology studies, the relationships within the genus and the species boundaries have never been tested using modern methods. This research uses original type series, as well as specimens spanning the distribution for two dozen *Paruroctonus* species in the California Academy of Sciences collection, as well as available data in public DNA repositoriess. The barcode gene, Cytochrome-oxidase1, was sequenced in order to infer a phylogeny and evaluate the species groups that currently exist based solely on morphology. By understanding species-level relationships of *Paruroctonus*, we can further our understanding of this model genus, and and what we know about their ecology and physiology in the context of evolution.

Poster presentation.

EFEITO DA URBANIZAÇÃO SOBRE O PADRÃO DE DIVERSIDADE E A CONDIÇÃO CORPORAL DE ESCORPIÕES DA MATA ATLÂNTICA

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Ecossistemas urbanos restringem a distribuição de espécies florestais, podendo relacionar-se a condições desafiadoras que prejudicam a condição corporal. Dinâmicas nas áreas urbanas geralmente leva a uma simplificação das comunidades que habitam manchas florestais nas cidades, ocasionando trocas de espécies sensíveis por oportunistas. No presente estudo, investigamos o efeito da urbanização, em escala de paisagem, na condição corporal e diversidade de escorpiões. Amostragens foram realizadas em 10 manchas florestais inseridas em uma matriz urbana no município de Paulista, Brasil, originalmente coberto por floresta tropical úmida. O entorno da paisagem de cada fragmento foi caracterizado pela quantidade de floresta, agricultura e cobertura do solo. Comprimento corporal individual, massa seca, lipídica e muscular foram usados como proxies da condição corporal de *Tityus pusillus*. No total, foram coletados 147 escorpiões, pertencentes às espécies *Ananteris mauryi, T. pusillus, T. stigmurus* e *T. neglectus*. A cobertura florestal explicou 28% da variação das espécies. Houve relação positiva entre cobertura florestal e abundâncias de *T. pusillus* e *A. mauryi*, enquanto *T. stigmurus* foi afetado negativamente pela cobertura florestal. A riqueza de espécies e a abundância total de escorpiões não foram influenciadas por nenhuma métrica de paisagem. Fêmeas de *T. pusillus* foram afetadas pelas variáveis da paisagem, apresentando maior massa corporal com o aumento da cobertura florestal. Nossos resultados sugerem que florestas urbanas são capazes de suportar assembleias de escorpiões. Contudo, há uma troca de espécies florestais especializadas para espécies oportunistas. A cobertura florestal provou ser um fator importante na manutenção de populações de escorpiões saudáveis em áreas urbanas.

Poster presentation.

MOLECULAR DATA REVEAL CRYPTIC SPECIES WITHIN THE MOST COMMON TARANTULA SPIDER FROM ARGENTINA, *Catumiri argentinense* (ARANEAE: THERAPHOSIDAE)

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Ischnocolinae is one of 11 subfamilies of the family Theraphosidae and has an intricate taxonomy, much like most theraphosid taxa. The genus *Catumiri* Guadanucci, 2004 comprises small-sized theraphosids and presently includes four species: *C. argentinense* (Mello-Leitão, 1941), *C. chicaoi* Guadanucci, 2004, *C. parvum* (Keyserling, 1878), and *C. petropolium* Guadanucci, 2004 (type species of the genus). *Catumiri argentinense* is present in Argentina and Chile and perhaps is the most common and abundant theraphosid spider in the first country. Moreover, its distribution covers from the north of provinces of Jujuy and Salta, until southern La Pampa province. The holotype female is described from Catamarca province and the allotype male from Jujuy province, both about 500 km distant from each other. Although some species of *Catumiri* show a conservative morphology, e.g., females of *C. argentinense* cannot be distinguished from those of *C. parvum* by morphology, instead they are differenced by the geographical distribution, we have been observed many differences in somatic characters and even genitalic among some populations of *C. argentinense*. Rather than find support for one taxon as previously hypothesized, species delimitation from COI sequences using multiple approaches reveal *C. argentinense* as a complex of cryptic species comprising lineages from Tres Cerros (Corrientes), Tandilia (Buenos Aires), Pampean grasslands (Córdoba + Santiago del Estero), Ñacuñán (Mendoza) and Tucumán + Jujuy (identified as *C. argentinense*), most of them undistinguishable by morphological characters, other presenting new characters for the genus.

Poster presentation.

WHICH IS THE REAL *Plesiopelma longisternale*? (ARANEAE: THERAPHOSIDAE) REVISION OF TYPES, MOLECULAR PHYLOGENY AND MORPHOLOGY

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Plesiopelma longisternale (Schiapelli & Gerschman, 1942) is a medium-sized tarantula widely distributed in Argentina and Uruguay. This species is very common in northern and central Argentina inhabiting mountainous systems and open areas where it construct shelters covered with dense silk. There are some degree of morphological variation among populations from different areas, mainly in the body size and male palpal bulb and such variation may even found in a single locality. Moreover, the holotype male and allotype female are described from different localities. The aim of this work is to examine and re-describe the types of *P. longisternale* and construct a dataset of cytochrome *c* oxidase subunit I (COI) sequence to asses species limits within *P. longisternale*. We obtained sequences from most populations of northern and central Argentina and present the results of a species delimitation analysis using ABGD, mPTP and GYMC. The resulting molecular species delimitation and morphology unveils a new species of *Plesiopelma* and corroborate the identity of *Plesiopelma longisternale*. In addition, from the examination of types, we noticed that the genitalic features drawn in the original publication of the holotype male are not congruent with the specimens deposited.

Poster presentation.

UNEXPECTED DIVERSITY: THE MYGALOMORPH SPIDER COMMUNITY FROM A NATURAL RESERVE REPRESENTING THE DRY CHACO REGION IN ARGENTINA

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Most species of Mygalomorphae spiders are known to be habitat specialists, have a sedentary lifestyle with restricted geographic distributions. The dry Chaco ecoregion in Argentina is an extensive region located northern in the provinces of Chaco, Córdoba, Formosa, Salta and Santiago del Estero. This habitat is characterized by a xeric vegetation composed of small shrubs and iconic tree species such as "quebracho-blanco" over a sandy soil. The climate at the region is temperate with extreme temperatures above 40°C during summer. The only Natural Reserve that preserves an undisturbed area of the dry Chaco is the Copo National Park located northeastern Santiago del Estero province. Recent surveys carried out during two sampling dates at this area revealed a remarkable diversity of mygalomorphs spiders not expected to be found in a such dry habitat with lack of suitable refuges (e.g. logs, rocks). We performed two surveys in spring and autumn, during which we were collecting the spiders during both day and night. We registered 10 mygalomorph species belonging to the families Actinopodidae, Idiopidae, Theraphosidae (Theraphosinae and Ischnocolinae) and Pycnothelidae. All specimens were found inhabiting burrows with open entrances, with small turrets or closed with a trapdoor. From this work, we present new distribution records for Santiago del Estero province, first citations for Argentina, and new species discovered for science. This spider community is relevant for future conservation studies in the area because it comprises a diversity hotspot of these threatened spiders, even highest that some of the richest areas in tropical regions.

Poster presentation.

"SLOW SCIENCE" RENAISSANCE: UNDERSTANDING THE ECOLOGY, NATURAL HISTORY AND DEMOGRAPHY OF A HIGHLY ENDEMIC MYGALOMORPH SPIDER FROM ARGENTINA

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"Slow science" approaches to understanding many aspects of the biology of species have declined over recent decades, despite the critical importance of these studies to conservation biology. This approach has been recently developed to study the natural history of an endemic and threatened mygalomorph spider from Australia in order to address future conservation issues. Here, we present a "slow science" study to unveil the demography, ecology and natural history of a potentially threatened species of migid trapdoor spider from mountainous grasslands in central Argentina. *Calathotarsus fangioi* Ferretti, Soresi, González & Arnedo, 2019 (Migidae) have a highly fragmented distribution in the eastern mountainous belt (Tandilia) from Buenos Aires province, in a landscape largely cleared for agriculture, livestock and tourism. The conservation significance of Mygalomorphae has long been recognized, and these spiders remain a flagship group for terrestrial invertebrate conservation in many countries. By studying growth rates, life spans, recruitment, natural history, dispersal and other aspects of population and individual health, we aim gradually to uncover the population dynamics of a discrete natural population. In this work, we summarize natural history data for a parcel of 98 individual trapdoor spiders marked initially following 44 months of monitoring and highlight preliminary demographic trends and biological observations related with reproductive period, courtship behavior, egg sacs and dispersion.

Poster presentation.

REDELIMITATION OF THE GENUS *Idiops* PERTY, 1833 (IDIOPIDAE) AND TRANSFER OF FIVE SPECIES TO THE GENUS *Segregara* TUCKER, 1917

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Trapdoor spiders of the genus Idiops Perty, 1833, (Idiopidae, Idiopinae), are traditionally diagnosed by presenting the combination of two complete rows of teeth in the basal segment of the chelicera, absence of spinules on the coxae and two pairs of sternal sigilla. After preliminary phylogenomic analysis of Idiopidae, we propose that Idiops be redelimited to include only Neotropical species. These differ from the others genera by the presence of a row of large teeth on the chelicerae along the retromargin, small teeth on the chelicerae concentrated in the basal third of the promargin, absence of spinules on the coxae and two pairs of sternal sigilla. Based on the examination of some African types belonging to Idiopinae and the new diagnosis of the genus Idiops, we propose the transfer of five species of Idiops to the genus Segregara Tucker, 1917. Segregara spiders can be characterized by the presence of spinules on the coxae, three pairs of sternal sigilla and small posterior sternal sigilla. Thus, we present new combinations for Segregara monticola (Hewitt, 1916) comb. nov., S. monticoloides (Hewitt, 1919) comb. nov., S. ochreolus (Pocock, 1902) comb. nov., and S. sylvestris (Hewitt, 1925) comb. nov. from South Africa and S. mossambicus (Hewitt, 1919) comb. nov from Mozambique and South Africa. We also emphasize the need to review the other species included in Idiops, especially for the African region, for the correct positioning in Idiopinae or even the proposition of new genera to accommodate these species.

Poster presentation.

THE USE OF MORPHOMETRIC ANALYSIS TO DELIMIT TWO BRAZILIAN TARANTULAS AND NEWS ABOUT THEIR BIOGEOGRAPHIC DISTRIBUTIONS

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Vitalius Lucas, Silva & Bertani, 1993 is a genus of theraphosids spiders characterized by its high morphological homogeneity, that difficult the delimitation and identification of its species. The close related species *V. parananensis* Bertani, 2001 and *V. vellutinus* (Mello-Leitão, 1923) are constituted by identical females, without any morphological character able to differentiate them. The only way to distinguish them is through their disruptive geographical distribution, where *V. paranaensis* occurs in the state of Paraná, Brazil and Misiones, Argentina and *V. vellutinus* occurs in the west of the state of São Paulo, Brazil. Males of these species do not suffer with this problem, once it's have distinct sexual characters. Using traditional morphometric analyses, we aimed to raise characters capable of distinguishing the females of these two species. In addition we performed a Species Distribution Modeling to verify possible other areas of suitability of occurrence for these taxa. We found differences in thickness and proportion of the legs of the females of these species. The Species Distribution Modeling pointed that *V. vellutinus* has an area of suitability for occurrence in the north of Paraná, as well as *V. paranaensis* in the south of São Paulo. Observing maps of the area of occurrence of the species in detail, we highlight the existence of some possible geographical barriers that may have influenced in their current distribution and show the importance of morphometric tools for taxonomic studies.

Poster presentation.

THE FAUNA PORTAL WEB IDENTIFICATION PLATFORM: A CONCEPT FOR THE RAPID DOCUMENTATION OF UNDESCRIBED SPECIES

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The majority of the world's invertebrate fauna remains undescribed and it is likely that many species will remain undocumented before they go extinct. Approximately 70–80% of Australia's invertebrate fauna is undescribed. Some 4,000 Australian spider species are named and species estimates have placed the true diversity of this order in Australia between 8,500 and 20,000 species. Over the last five years, an average of 56 species were named each year. Assuming a similar discovery speed, it would take 90–276 years to describe the remaining Australian araneofauna. Meanwhile, it is virtually impossible to use spiders in environmental studies or assess their distribution patterns, particularly of rare species of conservation significance. The Fauna Portal Australia (www.faunaportal.org) provides a stopgap for the documentation and identification of Australia's undocumented invertebrate fauna. It is based on a taxonomically stable nomenclatural system derived from proven zoological principals (reference specimen in public institutions and diagnosis) supported by an underlying database that provides genus- and species-level nomenclatural codes. Diagnostic images for each species allow for an identification of each species and they are accessible via filters for projects, morphology, sex and/or developmental stage and distribution. Documentation of a new species is fast due to the simple backend design of the website. User-restricted sections allow developing additional projects, for example research data can remain concealed until they are published. We believe the Fauna Portal has the potential to speed up species discovery, documentation and identification in Australia and elsewhere supporting environmental and taxonomic research.

Poster presentation.

THE HOX LOGIC OF THE CHELICERATE PROSOMA IN THE DADDY LONGLEGS *Phalangium opilio*

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Chelicerates exhibit remarkable diversity of appendages, spanning modifications for envenomation, spinning silk, copulation, sensing the world, and others. Notwithstanding, prosomal appendages fall into three conserved identities: chelicerae (deutocerebral), pedipalps (tritocerebral) and walking legs. One notable exception are horseshoe crabs, which present a similar identity of tritocerebral appendage and walking legs ("no pedipalp"). Hox genes are important selectors of body segment identity across Bilateria, but still relatively little is known about their role in chelicerates. To understand the genetic patterning of chelicerate prosomal appendages, we investigated the role of the Hox genes *labial* (*lab*), *proboscipedia* (*pb*), *Deformed* (*Dfd*) and *Sex combs reduced* (*Scr*) in the daddy longlegs *Phalangium opilio* Linnaeus 1758 (*Po*). Knockdown of *Po-Dfd* through RNA interference results in the transformation of L1 and L2 legs into pedipalp, whereas L3 legs are only transformed into pedipalps upon double knockdown with *Po-Scr*. Knockdown of *Po-lab* results in pedipalp-to-chelicera transformation, and double knockdown of *Po-lab+Po-Dfd* results in both pedipalp and L1 leg transformation into chelicera. To further explore the role of these genes in chelicerates, we investigated the expression of Hox paralogs in the horseshoe crab *Limulus polyphemus* Linnaeus 1758 (*Lpol*), which presents multiple Hox clusters. We show that homonomous expression of *Lpol-lab* paralogs across post-cheliceral appendages correlates with their similar identity (walking legs), in contrast to other chelicerates where *lab* expression is concentrated in the pedipalps. These experiments elucidate the Hox logic of chelicerate prosomal appendage specification and pave the road for exploring the genetic basis of appendage specializations across arachnids.

Poster presentation.

THE ARACHNID TANK: DEFENSIVE BEHAVIOR IN THE RICINULEID *Cryptocellus narino*

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Prey-predator interactions are mediated by several factors, where morphology plays a key role for both prey and predators. Ricinuelids are a neglected arachnid order with a very low diversity, which has led to poor knowledge in several aspects related to the biology of this group, including its defensive mechanisms. Some records suggest that the main defensive mechanisms of ricinuleids would be mainly chemical, while other defensive strategies of this group are unknown. Herein we analyzed and compared mechanically the body hardness of the riciuleid *Cryptocellus narino*, using a force measurement device , against other sympatric arthropods with different body hardness, namely wolf spiders (soft bodied) and isopods (hard-bodied). In a series of experiments, we also evaluated the defensive strategies of the ricinuleids, wolf spiders (*Schizocosa* sp.), and isopods against the spider *Pavocosa* sp. as a potential predator. When offering each arthropod to the potential predator, we recorded consumption, number of bites and survival of the attacked prey when not consumed. Interestingly we found that all prey were readily attacked by the predator *Pavocosa* sp., however, only spiders were consumed. During all experiments, we observed spiders readily bit all prey; however, in none of cases ricinuelids were preyed, similarly, the consumption rate of isopods was low compared to spiders. We did not record death of any ricinuleid after the attack, nor record secretions or other defensive displays of ricinuleids, suggesting that body hardness would be one of the main defensive mechanisms of these arachnids, similarly as it occurs with isopods.

Poster presentation.

SCORPIONS THAT DON'T BREAK THE RULES? HYPOALLOMETRY FOR GENITAL TRAITS AND HYPERALLOMETRY FOR DIMORPHIC SEXUAL TRAITS

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The dimorphic traits and their allometric patterns are related to different selective pressures faced by both sexes and to the function of the traits evaluated. For this type of studies, scorpions are a very interesting and little studied model. The aim of this work is to quantitatively analyze sexual dimorphism (SD), and allometric slopes of multiple traits in adult individuals of *Timogenes elegans* (Bothriuridae). Characters used during sexual interactions (chelae, chelicerae, metasoma, telson), and others used in other contexts (pecten, leg, stridulatory organ), as well as genital traits (genital operculum, hemispermatophore) were considered. For this purpose, the structures of 44 males and 17 females were photographed, and different measurements (length, height, width) were taken with ImageJ software. Statistical and graphical analyses were performed with R, and the allometric slopes of the traits were obtained for each sex. It was observed that most of the somatic traits presented a high degree of SD in favor of males (chelae, pecten, telson, leg, metasoma) except chelicerae, which were wider in females. For both sexes, we found negative allometry in the genitalic structures and leg femur; and positive allometry in the chelae, although for the chelae height steeper slope was observed in males than in females. These results would indicate that genital traits would be responding to stabilizing pressures, while the chelae could be under sexual selection pressures. The results are discussed considering the function of each structure from an evolutionary and sexual selection framework.

Poster presentation.

SPIDERS FED BY PROTEIN RICH, AND LIPID RICH DIETS DID NOT DIFFER IN DISPERSAL TENDENCIES, LIGHT HELPED THEM TO FIND APPROPRIATE SPOTS FOR BALLOONING

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Spiders are known for their effective aerial dispersion mode called ballooning. This behaviour may be driven by physiological, intrapopulation, and/or environmental factors. The aim of this study was to ascertain the effect of nutritional imbalance on the tendency for ballooning in juveniles of the wolf spider *Pardosa agrestis*. Three spider groups (n=50 for each group) were fed regularly by flies *Drosophila melanogaster* cultivated on three different media: (1) with balanced protein/saccharide ratio, (2) enriched by protein (resulting *Drosophila* are protein-rich) and (3) enriched by saccharide (resulting *Drosophila* are lipid-rich). The fourth spider group (4) was fed only once and then starved. Ballooning was tested in arenas under simulated optimal temperature, wind, and light conditions. We recorded ballooning in 11 % of spiders. We did not find a significant effect of diet on ballooning tendencies (lm, p-value of the ballooning position: 0.4733). Starved individuals had reduced dispersal capacity probably because of reduced silk production. 70% of individuals dispersed from illuminated edges of arena. Environmental factors, such as temperature, wind speed, and time of day, might impact a spider's decision to tiptoe, rappel, or balloon. It is likely that for these reasons spiders only fly under ideal conditions. According to our experiment, sunshine was considered an important factor in searching for appropriate spots for ballooning.

Poster presentation.

NOVE ESPÉCIES NOVAS DO GÊNERO *Epicratinus* JOCQUÉ & BAERT (ARANEAE: ZODARIIDAE)

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A família Zodariidae apresenta 90 gêneros e 1259 espécies de aranhas no mundo. Estão divididas em cinco subfamílias: Procydrelinae, Lachesaninae, Cryptothelinae, Zodariinae e Storeninae. A família é diagnosticada pela ausência de sérrula, dentes lateralmente posicionados nas unhas dos tarsos, garras das quelíceras pequenas, fiandeiras anteriores longas, processo tibial prolateral em todas as pernas de machos e fêmeas e hábito fossóreo. Apresentam semelhanças morfológicas e comportamentais com as espécies de formigas que predam, o que em geral permite acesso aos formigueiros sem serem molestadas. Dentro da subfamília Storeninae, que é caracterizada pela presença de cerdas em forma de cinzel no metatarso e ausência de órgão femoral, encontra-se o gênero *Epicratinus* Jocqué & Baert. Este é diagnosticado por apresentar fila ocular posterior fortemente procurva, fiandeiras médias e laterais posteriores fusionadas nas fêmeas e ausência total dessas fiandeiras nos machos. *Epicratinus* apresenta 16 espécies descritas, uma na Guiana e quinze no Brasil. Apresentamos aqui 9 espécies novas, todas com machos e fêmeas, que ocorrem no Brasil, nos estados de Alagoas, Bahia, Ceará, Espírito Santo, Maranhão, Mato Grosso, Minas Gerais, Paraíba e Pernambuco.

Poster presentation.

EL SALTO DEL LOBO: DIMORFISMO Y COMPORTAMIENTO SEXUAL EN *Paratrochosina amica* (MELLO-LEITÃO, 1941), UNA ALLOCOSINAE DE PASTIZALES SUDAMERICANOS

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El conocimiento de la subfamilia Allocosinae (Lycosidae) en Sudamérica ha estado centrado mayoritariamente en *Allocosa senex* (Mello-Leitão, 1945) y *Allocosa marindia* Simó, Lise, Pompozzi & Laborda, 2017, dos especies de costas arenosas con patrones de dimorfismo sexual y estrategias sexuales opuestas a las esperadas en arañas. Los comportamientos no tradicionales podrían estar asociados al ambiente riguroso en el cual habitan, pero para poner a prueba esta hipótesis es preciso estudiar Allocosinae que habiten otros ambientes. Nuestro objetivo fue identificar y ubicar filogenéticamente una especie de Allocosinae que habita en los pastizales de Uruguay, e investigar el dimorfismo sexual de tamaño y su comportamiento sexual. Se identificó la especie como *Paratrochosina amica* y se corroboró su posición filogenética en Allocosinae mediante estudios genéticos y morfológicos. Se realizaron muestreos nocturnos de tres noches consecutivas para estimar la actividad en superficie en dos localidades de Montevideo, donde se recolectaron 35 hembras y 18 machos. Se midió ancho del prosoma (N=94) y se encontraron tamaños corporales similares entre sexos (ANOVA, F=2.46, p=0.12). Se realizaron encuentros de hembras y machos obteniéndose 10 cópulas. En todos los casos los machos se acercaron a las hembras e iniciaron el cortejo. La duración promedio de cópula fue 386,4±801,3 s y presentaron una media de 5,44±6,15 inserciones palpares. Se registró por primera vez en arañas lobo el "salto" en el cortejo del macho, que consistió en elevarse éste del sustrato. De acuerdo a nuestros resultados, *P. amica* presentaría dimorfismo sexual típico y comportamientos reproductivos tradicionales en arañas lobo.

Poster presentation.

¿QUIÉN SE PARECE A QUIÉN?: COMPORTAMIENTO SEXUAL DE LA ARAÑA LOBO "MIXTA" *Diapontia uruguayensis*

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Los integrantes de la familia Lycosidae se caracterizan por ser errantes. Sin embargo, unas pocas especies viven permanentemente en tela y también hay especies que se registran en tela y caminando ("mixtas"). ¿Repercuten estos cambios de hábito de vida y de sustrato en el comportamiento sexual de las especies? En el licósido de tela *Aglaoctenus lagotis* se reportan conductas distintas a las clásicas de licósidos. Aquí nos planteamos describir el comportamiento sexual de la especie "mixta" *Diapontia uruguayensis,* en un escenario comparativo con otros licósidos cercanamente emparentados. Los individuos fueron colectados en San Jacinto (Canelones, Uruguay) y los encuentros sexuales (N= 20) fueron filmados y analizadas con el programa JWATCHER. Se registró latencia de cortejo, duración de cortejo y de cópula, así como la ocurrencia y duración de las conductas observadas. Los encuentros ocurrieron sobre una fina sábana de seda, construida por la hembra al ras del sustrato. La duración del cortejo fue 13.6±12.15 min. El cortejo masculino se caracterizó por vibraciones abdominales, tensados y elevación-descenso lento y simultáneo de patas delanteras, mientras las hembras vibraron y rotaron el abdomen. La duración de la cópula fue 140.55±26.21 min. El patrón copulatorio fue de una eyaculación por inserción con masticado de palpos entre inserciones. Los desmontes ocurrieron hacia adelante y el 70% de las hembras quedó cataléptica. Estos resultados preliminares sugieren un comportamiento sexual con rasgos mixtos entre licósidos errantes (mayoría de conductas observadas) y de tela (tensado, propio de este sustrato). Se discuten las implicancias evolutivas de estos hallazgos.

Poster presentation.

WINGLESS FLIGHT: AN UPDATE ON BALLOONING IN SPIDERS AND THE ERRATICAL USE OF TERMS

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Ballooning is an aerial dispersal mechanism used by spiders, in general by small juveniles. By means of silk threads, they can travel throughout the air from short to long distances and colonize new areas. Individuals reach high positions and perform the typical tip-toeing or other behaviors such as dropping on a dragline until wind currents allow them to spread, hanging from their silk-lines. Some authors describe a behavior of short-distance aerial dispersal called rappelling, but that is not considered as ballooning. Though this phenomenon has received more attention in the last few years, some incongruity has been observed regarding the use of terminology related to ballooning. Our aim was to survey the status of aerial dispersal studies, looking for potential biases and incongruities in the use of definitions of pre-ballooning and ballooning behaviors. We used the database of research literature SCOPUS. We obtained 203 research articles, being the most used terminology ballooning (160 articles) and aerial dispersal (113 articles). 184 were experimental research articles, 9 reviews, 3 book chapters and 7 from other categories. The terms tip toe, drop on dragline and rappelling appear differentiated from ballooning in 0%, 40% and 100% of the articles containing both terms, respectively. Spider families with reports of ballooning were Actinopodidae, Araneidae, Ctenidae, Eresidae, Linyphiidae, Lycosidae, Pisauridae, Salticidae and Theridiidae. Ballooning research seems to be focused on few spider families and by a handful recognizable specialist. The need of detailed descriptions, clear definitions and common terminology of ballooning and pre-ballooning behaviors is highlighted.

Poster presentation.

AN APPROACH TO AMAZONIAN CURTAIN-WEB SPIDERS' KNOWLEDGE: DESCRIPTION OF NEW SPECIES *Linothele* KARSCH, 1879 (MYGALOMORPHAE: DIPLURIDAE) FROM THE UPPER AMAZONIA

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Linothele Karsch, 1879 (Mygalomorphae: Dipluridae) is one of the most diverse genera in the Dipluridae family. Taxonomic features that differentiate Linothele from other members of Dipluridae are cracked or pseudo-segmented leg tarsi, absence of a maxillary lyra, and medially and asymmetrically positioned vesicles in spermatheca. From this genus, eight species have been described in Ecuador, and currently, just one is described for Amazonia, creating a bias of information for Amazonia knowledge. In this work, we describe two new sympatric species of *Linothele* from the Upper Amazonia in eastern montane forest ecosystem, located in Sumak Kawsay in-situ reserve in Ecuador. These new species can be distinguished from all other species by the different placement of vesicles and its morphology on spermatheca (First specie multilobulated and second one with an enlarging lobule); different coloration and setation and different niche occupation; we see an arboreal webbing behavior along the reserve and terrestrial behavior. With the first species we present male and female description; the second just a female. This is the second case of sympatric species in Ecuadorian neotropical taxa, showing a plausible richness and endemism on both eastern and western sides of the Andes. In addition, we comment on niche occupation (Different layers, using arboreal and terrestrial habitus) and possible morphological differences caused by different size and structure on scapulae formation in tarsi. Also, we report the first arboreal species in Ecuadorian Amazonia, where the spiderweb has found around three crusts.

Poster presentation.

EFECTO DE LA APLICACIÓN DE CALDOSULFOCALCICO (CSC) SOBRE EL ÁCARO DEL GÉNERO *Brevipalpus*

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A pesar de la información a nivel internacional acerca del ácaro portador del virus (CilV-C) causante de la leprosis de los cítricos, en el municipio de Palos Blancos del Departamento de La Paz-Bolivia, no existe información suficiente respecto al tema. Esta enfermedad puede ser transmitida solamente por el ácaro del género *Brevipalpus*. Este trabajo pretende ofrecer una alternativa al uso convencional de acaricidas para el control de vectores de enfermedades. El uso de caldo sulfocalcico (CSC) es parte de las prácticas de agricultura orgánica, con lo cual también puede ser considerada en los parámetros de manejo de sistemas agroecológicos. Se utilizaron diferentes dosis de CSC (insumo orgánico) para el manejo de poblaciones de estos ácaros. Se identificó y caracterizó al ácaro portador del virus infeccioso que causa la leprosis. Los resultados obtenidos muestran la efectividad en la disminución de ácaros encontrados con dosis de 3 y 2.5 L de CSC en 20 litros de agua, luego de dos semanas de la tercera aplicación. El ácaro encontrado pertenecería a la especie *Brevipalpus yothersi*. Se determina que el uso de CSC es parte de un manejo integrado que aporta en la sanidad vegetal del cultivo para la prevención de la enfermedad causada por CilV-C, además de disminuir la población de *Brevipalpus yothersi*.

Poster presentation.

TWO NEW SPECIES OF *Sarinda* PECKHAM & PECKHAM, 1892 WITH AN UPDATE ON SARINDINI DIVERSITY IN URUGUAY (ARANEAR: SALTICIDAE)

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Salticidae is the most diverse spider family with more than 6400 described species. Among the seven subfamilies of jumping spiders, Salticinae includes almost 93% of the family's diversity and is split into two clades: 1) Salticoida, with more than 420 genera and worldwide distribution, and 2) Amycoida, with 64 genera distributed mainly in the Neotropics. Among the nine tribes of Amycoida, Sarindini is an ant-mimic lineage composed of seven genera and 35 species. *Sarinda* Peckham & Peckham, 1892 is distributed from Southern USA to Argentina and is composed of 16 described species. The sarindine fauna of Uruguay is poorly known, with previous records of *Parafluda banksi* Chickering, 1946 and *Sarinda marcosi* Piza, 1937. Recently, during collecting surveys in Uruguayan grasslands, we found undescribed species of *Sarinda* associated with ants of the genus *Camponotus* Mayr, 1861. We propose two new species of *Sarinda* and update the sarindine records from Uruguay. *Sarinda* sp. nov 1 resembles *S. capibarae* Galiano, 1967 by having a long embolus and a conic RTA in males and in the size and position of the spermathecae in females, but differs in the number of embolus coils, shape of the RvTA and in the size and position of the atrium. *Sarinda* sp. nov 2 resembles *S. armata* (Peckham & Peckham, 1892), by having a short embolus and by the size and shape of the spermathecae, but differs in the shape of RTA and in the distance between secondary spermathecae. New records for *P. banksi* and *S. marcosi* are provided.

Poster presentation.

SPIDER INVENTORY OF THE RIPARIAN FOREST OF RÍO NEGRO, URUGUAY, REVEALS BIOGEOGRAPHICAL IMPLICATIONS OF SPECIES DISTRIBUTION

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The Río Negro is the most important river within the territory of Uruguay. In order to know the assemblages of spiders in the riparian forests of this river we performed during one year seasonal samplings along the course of the river in Uruguay. An inventory consisting of 284 species belonging to 36 families was obtained. Of these, 30 species represent new records for the country and furthermore the southernmost distribution record for these species. This new findings represented an expansion for the species between 400 to 1200 km further south. Most of the species are associated to Atlantic Province and Araucaria Forest Province but also from Yungas Province. The conditions to be the southernmost records, little represented in arachnological collections of the country and associated to threatened environments (in the case of Rio Negro by habitat fragmentation), meets with three criteria to be included in the list of arachnids with priority of conservation in Uruguay. The results provide evidence about the role of the riparian forest as biological corridors for spiders; give a new scenario of the connectivity of subtropical biota with temperate zones of South America and constitute an input to consider in conservation plans. Funding: Comisión Sectorial de Investigación Científica, CSIC, Universidad de la República.

Poster presentation.

USING ULTRACONSERVED ELEMENTS TO DELIMIT CRYPTIC SPECIES IN THE NEW ZEALAND HARVESTER *Aoraki denticulata* (ARACHNIDA, OPILIONES, CYPHOPHTHALMI)

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Aoraki denticulata, a widespread mite harvester species endemic to the Southern Island of New Zealand, has been shown to have high levels of genetic divergence between populations despite a lack of clear morphological differences. The association of deep genetic divergence and geographic structure coupled with morphological conservatism indicates that there may be a complex of cryptic species within *A. denticulata.* Previous studies have utilized Sanger sequencing, which limits the number of loci that can be sequenced and analyzed. Because this method has been exhaustively applied in this system without resolving cryptic species limits, we used target-enriched sequencing using ultraconserved elements to reconstruct phylogenies and conduct our analyses. In total, we sequenced two outgroup taxa and 115 *Aoraki* specimens, including museum specimens that otherwise would not have been able to be sequenced due to degraded DNA. We recovered 852 and 651 loci at 50% and 75% taxon coverage, respectively. We explored potential cryptic speciation in this lineage using multiple genetic species delimitation analyses, including machine learning techniques. Our findings confirm that *A. denticulata* exhibits deep genetic divergences and shows strong population structure; we retrieved multiple cryptic species within *A. denticulata*, each with a distinct geographic range. These results are promising for resolving the species status within one of the most difficult cryptic species complexes known in Opiliones.

Poster presentation.

HIDDEN BY MORPHOLOGY: AN UNEXPECTED NEW MYGALOMORPH SPIDER GENUS FROM MERIDIONAL SOUTH AMERICA (ARANEAE, PYCNOTHELIDAE)

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The mygalomorph spider family Pycnothelidae comprises 15 described genera with 137 nominal species. Based on phylogenomic analysis performed by Montes de Oca *et al*. in 2022, five major lineages/subfamilies were recognized in Pycnothelidae. One of these is Pselligminae, composed by four described genera: *Stenoterommata* Holmberg, 1881, *Rachias* Simon, 1892, *Pselligmus* Simon, 1892, *Psalistopoides* Mello-Leitão, 1934. *Stenoterommata* includes 25 nominal species found in southeastern and southern South America. In the same analysis, *Stenoterommata* was recovered as non-monophyletic. *Stenoterommata palmar* Goloboff, 1995 was recovered in a lineage close related to unknown genus plus *Rachias* forming a sister-group with *Stenoterommata* (*sensu stricto*) plus another undescribed genus. In this work, a new pycnothelid genus is proposed for include *S. palmar* based on their phylogenetic position and in morphological features. The new genus differs from the remaining Pselligminae genera by the combination of following features: inferior tarsal claw on all legs, dorsal spines on male palpal tibia; low parallel smooth keels; long and slender embolus; single spermathecal dome; outer spermathecal lobe bearing a single receptaculum; posterior lateral spinneret with triangular apical article. *Stenoterommata tenuistyla* Goloboff, 1995 is transferred to the new genus based on the diagnostic features. There is the possibility of others three-clawed *Stenoterommata* species be transferred to this genus, but only after we performed a phylogenetic analysis with molecular data this decision will be proposed. In the other hand, based on two morphological phylogenetic analysis, one performed by Goloboff and other by the first author, *S. palmar* was recovered within *Stenoterommata* genus.

Poster presentation.

DISPERSIÓN, DISTRIBUCIÓN Y ESTRUCTURACIÓN GENÉTICA EN *Aglaoctenus lagotis*: UNA ARAÑA LOBO DE TELA PRIORITARIA PARA LA CONSERVACIÓN EN URUGUAY

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Los estudios que brindan información sobre la capacidad dispersiva de las especies, su distribución y la diversidad y estructuración genética de sus poblaciones, son esenciales para el establecimiento de estrategias de conservación. *Aglaoctenus lagotis* es una araña lobo que vive en tela, a diferencia del hábito errante característico de la familia. Tiene una distribución sudamericana, siendo Uruguay su límite austral y donde ha sido declarada prioritaria para la conservación. Se reconocen dos formas dentro de la especie, Forma I y Forma II, que han sido confirmadas recientemente como especies diferentes. La Forma I se distribuye exclusivamente en Uruguay y habita estrictamente los pastizales, ambientes en constante reducción por efectos antrópicos. El objetivo de este trabajo fue investigar la capacidad de dispersión aérea, la estructuración genética y la distribución de la Forma I de *A. lagotis*, integrando información de datos comportamentales, genéticos y ambientales. Mediante experimentos de laboratorio y de campo se constató la capacidad de la especie de dispersarse por el aire (*Ballooning*), pero de manera diferente a la que típicamente lo hacen otras especies de la familia. Se observó un patrón de alta conectividad genética entre las localidades estudiadas y la evidencia de un proceso de expansión poblacional reciente. La predicción de los modelos de distribución al futuro bajo escenarios de cambio climático evidencia un notorio decremento en la distribución de la especie. Este estudio interdisciplinar aporta al conocimiento de la historia evolutiva de la especie y contribuye a la detección de factores que inciden en su viabilidad.

Poster presentation.

IDENTIFICATION OF SPIDER FAUNA THROUGH ITS GENITALIA IN SHERINGAL KP PAKISTAN

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The present study was carried out at Sheringal, Dir Upper, KP, Pakistan for the identification of spider fauna through its genitalia. Spiders belong to Class Arachinda and Order Aranae of the Phylum Arthropoda. Spiders feed on agricultural insect pests and also help in soil fertility. The study area was distributed among six quadrates i.e., Doki, Daramdala, Samang, Guryal, Shahoor and SiaSheringal. The specimens were collected by using different methods like Pitfall, Sweet net, common net and direct hand picking. A total of eight species belonging to 5 different families and 8 genera were identified in the study area out of 657 collected specimens. The family Theridiidae (n=95) with Cupboard spider, *Steatoda grossa* C.L. Koch, 1838; family Salticidae (n=88) with Jumping Spider, *Plexippus paykuli* Audouin, 1826; family Gnaphosidae (n=262) with Ground spider, *Barlandina afghana* Denis, 1958, *Micaria lenzi* Bösenberg, 1899 and *Micaria pulcherrima* Caporiacco,1990; family Lycosidae (n=143) with Jumping spiders, *Pardosa algoides* Schenkel, 1963 and *Pardosa haupti* Song, 1995; family Sparassidae (n=69) with Huntsman spiders, *Olios flavovittatus* Audouin, 1826 were recorded from the study area. Family Gnaphosidae (n=262) has the maximum number of species while family Sparassidae (n=69) has the minimum number of species. Collected specimens belonged to 5 families and identified up to species level by studying their genitalia. The present study was a preliminary endeavor of its kind and will provide a foundation for future taxonomic work on spiders and related fauna. Further research is recommended to explore more species of spiders from the studied area with collections from all possible habitats and in all seasons of the year.

Poster presentation.

EFFECTS OF INSECTICIDES ON THE MOBILITY AND ACTIVITY RHYTHMS OF *Hogna* cf. *bivitatta* FROM SOYBEAN CROPS

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Wolf spiders are ground hunters and they walk in search of prey. The use of agrochemicals for pest control is an increasing practice in Latin America. Insecticides have been shown to have contrasting effects on spider mobility; for example, the application of cypermethrin reduces the distance moved while other agrochemicals, such as malathion, produce an increase in distance moved. The objective of this research was to evaluate the effects of the insecticides Thiamethoxam + lambda-cyhalothrin (pyrethroid and neonicotinoid) and methoxyfenocide (hormone mimic) on the move and activity rhythms of the spider *Hogna* cf. *bivittata*. Different concentrations of insecticides were prepared using analytical grade acetone as a solvent, for the control group only analytical grade acetone was used. The spiders were exposed to insecticides with one milliliter of solution applied topically. After being exposed, the spiders were recorded for 72 hours maintaining a photoperiod with natural light. The displacement and maximum speed reached every half hour were measured. The spiders exposed to insecticide methoxyfenocide moved longer distances than the control group, whereas Thiamethoxam + lambda-cyhalothrin had no effect. The spiders exposed to the insecticides spiders has shorter activity cycles compared to the control group. The increase in distances moved has been documented for some insecticides such as organophosphates in isopods, but it is the first time that it has been registered with the insecticides used in this research in spiders, it could be associated with variations in physiological processes.

Poster presentation.

BREAKING UNCONSCIOUS GENDER BIASES: LESSONS FROM 23 YEARS OF LATIN ARACHNOLOGY CONGRESSES

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This study about gender bias investigates the scientific production of men and women over the last ten Latin American Arachnology congresses in 23 years. The specific purposes analyze the gender bias relate to (i), participation in the committees, (ii) variety of research area, (iii) taxonomic researches, (iv) representation, (vi) academic leakage and, SWA as a driver of affirmative actions in the changing of the proportions of genders in scientific events. We found that 58.20% of abstracts had authorship shared by men and women, 35.77% had authorship only by men, while only 6.01% were composed solely of women. Regarding authorship composed by men and women, first female authorship was 52.40% and first male was 47.59%, suggesting that most of these female first authors are students. Last author's gender was composed of 29.49% female authors whereas men as the final author were 70.50%. We detected gender bias against women to be stronger in some research fields such as systematic, ecology [sample design], conservation compared to ecology [agroecosystems] behavior, education, where gender is more likely to be balanced. Our findings provide compelling evidence that gender plays a strong role in promotion decisions and this explanation is likely to be above any other professional criteria. New policies and clear criteria are demanded to avoid the gender gap and injustices in scientific community, especially in arachnology.

Poster presentation.

ASSESSING ARACHNID DIVERSITY IN EURASIA DURING THE EOCENE

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During the Eocene, the Earth experienced a greenhouse climate and large parts of the Northern Hemisphere were covered in humid, warm temperate forests. However, from the Oligocene–Quaternary, global temperatures dropped, leading to cooling and drying across the world. This drastic temperature change resulted in range shifts and extinction in Eurasian and North American taxa. The European succinite ambers (Baltic, Bitterfeld and Rovno) preserve a large diversity of arthropods, including arachnids. These ambers were deposited during the Paleogene, however, debate exists whether these ambers were deposited simultaneously or over 30 million years, and if they originated from adjacent or well-separated paleo-locations. Multiple species are shared across deposits, yet the fauna of each is distinct. We aim to test whether these three amber types represent the same ecosystem by sharing the same arachnid fauna and if Eurasian arachnid assemblages show a shift in adaptation from warmer to cooler climates from the Eocene until today. To accomplish this, we: (i) document species diversity in these ambers; (ii) test whether species recorded across multiple deposits are conspecific; (iii) map records of extant and fossil taxa to identify distributional shifts; and (iv) synchrotron scan selected taxa to examine morphological changes associated with adaptation to particular environments. Preliminary results support a shared ecosystem among European succinite deposits and show that several arachnid lineages shifted their distribution from northern Europe to tropical/subtropical climates since the Eocene. By understanding past diversity trends, we can better predict the future of our arachnid fauna given the ongoing climate crisis.

Poster presentation.

EXPLORING THE MORPHOLOGICAL AND FUNCTIONAL CONSEQUENCES OF THE ORTHOGNATH-TO-LABIDOGNATH CHELICERAL TRANSITION IN SPIDERS

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Spider chelicerae are critical to their survival and have undergone extensive transformation during their evolution. One of the major steps in the evolution and diversification of spiders was a shift in cheliceral orientation from plesiomorphic orthognathy (chelicerae operating in parallel) to apomorphic labidognathy (chelicerae operating in opposition). As a first step toward understanding the morphological and functional consequences of this change, we performed an intensive comparative study using one representative each from the two cheliceral types: *Calisoga longitarsus*, an orthognathous mygalomorph, and *Tigrosa georgicola*, a labidognathous araneomorph. We (1) measured morphological characteristics of the chelicerae and associated musculature from 3D Computed Tomography scans; and (2) we examine cheliceral function using high speed videography in order to propose functional consequences of the morphological differences. The goals of this study are to gather baseline functional data on spider chelicerae, generate methods that can eventually be used to sample across the spider tree of life, and lastly, develop a hypothesis regarding how chelicerae have been optimized as multipurpose structures.

Poster presentation.

PATRONES AMBIENTALES QUE INCIDEN EN LA DISTRIBUCIÓN DE LOS GREMIOS DE ARAÑAS EN PLANTACIONES DE *Eucalyptus dunnii*

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Una de las mayores amenazas para la biodiversidad es el cambio en el uso del suelo. En Uruguay las plantaciones forestales ocupan más de 12000 km² sobre áreas anteriormente ocupadas por pastizales, de las cuales *Eucalyptus dunnii* es de las especies comerciales más utilizadas. El objetivo del estudio fue conocer qué variables ambientales influyen en la distribución de los gremios de arañas en un paisaje de producción forestal de *E. dunnii*. Se realizaron dos muestreos (otoño y primavera) utilizando aspirador G-Vac. Se modeló la distribución potencial de los gremios de arañas en un área de 460 km^2, para lo cual se utilizaron 39 variables de las siguientes categorías: elevación del terreno, climáticas, cobertura y uso del suelo en hexágonos de 25 m y como algoritmo de modelación la función de favorabilidad. El modelo de distribución del gremio de las cazadoras de suelo fue explicado en mayor parte por la relación negativa con el nivel de elevación del terreno. En los gremios de tejedoras de tela orbicular, tela espacial, otros cazadores y cazadores por emboscada el modelo reflejó la incidencia positiva de la temperatura del cuatrimestre más húmedo. Por su parte en las tejedoras de tela tipo sábana, la relación positiva de la precipitación para el cuatrimestre más seco fue la variable de mayor incidencia en el modelo. Estos resultados evidencian la diferente respuesta de los gremios de arañas a la estructuración del paisaje forestal y constituyen un insumo para un manejo más sustentable de las plantaciones forestales comerciales.

Poster presentation.

TAXONOMIC NOTES ON AFRICAN (MOZAMBIQUE & MADAGASCAR) BIANTIDAE (OPILIONES, LANIATORES)

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The Opiliones Biantinae (18 genera and 107 species) have important diversity in Africa (17 genera and 82 species); however, the opiliofauna of many African regions remains poorly known. For all Mozambique only one endemic biantid (*Tetebius latibunus*) and three species (*M. leighi*, *M. zuluanus*, *M. traegardhi*), originally described from South Africa, have been recorded so far. Herein we proposed a new species of *Metabiantes* collected in Niassa, Mozambique. This new species has a peculiar sexual dimorphism: males have the leg II with very broad femur and tibia, and also have a ventrally granulated metatarsus. This dimorphism was previously known only from two other African species, *Metabiantes machadoi* and *Clinobiantes paradoxus*; the new species is distinguished from them both by characteristics of external and genital morphology. It is therefore the second biantid endemic to Mozambique. The previous endemic one, *Tetebius latibunus*, was a poorly known species, but the examination of the type specimen allowed us to access important morphological features and present herein a detailed redescription. Previously considered in Phalangodidae and Samoidae, the male genital morphology agrees with the recent transference to Biantidae. Moreover, the presence of two wide "*titillators*" with numerous internal finger-like projections and an eversible style surrounded by two lamellar conductors together with a long *lamina apicalis* and two groups of apical and basal macrosetae, besides the external morphology, support that is congeneric with the Malagasy species *Malgaceros boviceps* herein also redescribed. Therefore, we propose the new synonymy of *Malgaceros* with *Tetebius* and the new combination *Tetebius boviceps*.

Poster presentation.

RESOLVING PHYLOGENY AND GENERIC LIMITS OF PLEXIPPINE JUMPING SPIDERS USING UCE DATA

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The subtribe Plexippina is a group of primarily Afro-Eurasian salticids with such familiar genera as *Evarcha*, *Plexippus*, and *Hyllus*. Their high species diversity (~500 spp.), conservative body form, and simple genitalia render this group problematic for revisionary work. We investigate their phylogeny and currently-chaotic generic limits using Ultra-Conserved Element data. We confirm the monophyly of the tribe Plexippini and its two subtribes, Harmochirina and Plexippina, with one modification: the unusual antlike *Eburneana*, formerly interpreted as harmochirine, is resolved as sister to the rest of the Plexippina, suggesting its harmochirine-like epigynal pockets are a synapomorphy of the whole tribe. *Evarcha* was a special focus because its recent fragmentation into several genera is controversial, rejected by the WSC but accepted in Metzner's compilation. Our data recover it as monophyletic and thus credible as a single genus. *Hyllus* is polyphyletic, a collection of unremarkable large-bodied plexippines; species close to the type form an Asian clade, while African species will move to *Baryphas* and *Evarcha*. *Thyene* and *Pancorius* are largely monophyletic, but some members will need to move to other genera. We place phylogenetically all of the genera mentioned above, as well as *Artabrus*, *Burmattus*, *Epeus*, *Iranattus*, *Ptocasius*, *Telamonia, and Vailimia*. Plexippine groups with distinctive body forms in general come out as monophyletic, while some with conserved body forms are polyphyletic. Excessive reliance on superficial morphology has led to taxonomic mistakes. As phylogenetic knowledge improves, we will be able to better recognize morphological synapomorphies and clarify generic concepts.

Poster presentation.

REVISÃO TAXONÔMICA DO GÊNERO *Tullgrenella* MELLO-LEITÃO, 1941 (ARANEAE: SALTICIDAE: FREYINA)

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Tullgrenella Mello-Leitão, 1941 é um gênero com distribuição Neotropical e Andina, com 15 espécies descritas. Pode ser diagnosticado pelas seguintes estruturas nos palpos dos machos: fêmur com uma projeção ventral-proximal, apófise tibial retrolateral com projeção ventral como um gancho, divisão distal do tégulo com uma depressão central e bulbo com três escleritos: apófise tegular média modificado em forma de berço, condutor e pars pendula na face interna do êmbolo, com comprimento variável. As fêmeas podem ser reconhecidas pelos dutos copulatórios em espiral monoplanar no epígino. Nosso objetivo foi revisar taxonomicamente *Tullgrenella*, atualizando as diagnoses e também do levantamento de caracteres morfológicos taxonômicos e filogenéticos, e como resultados, são descritos pela primeira vez os machos de *T. corrugata* Galiano, 1981 e *T. peniaflorensis* Galiano, 1970 e a fêmea de *T. selenita* Galiano, 1970. Quatro espécies novas descritas: *T.* sp. nov. 1, do Uruguai; *T.* sp. nov. 2, *T.* sp. nov. 3 e *T.* sp. nov. 4, todas do Brasil. Além disso, detectamos cinco agrupamentos de espécies com similaridades morfológicas das genitálias. Os agrupamentos de espécies de *Tullgrenella*, são discutidos e estruturados em nos grupos: *morenensis* (6 espécies, incluída a espécie tipo), *quadripunctata* (3 espécies), *melanica* (2 espécies), *serrana* (6 espécies, sendo 4 novas), e grupo *peniaflorensis* (2 espécies), os quais propomos através de sinapomorfia putativa. Uma atualização sobre a distribuição do gênero nas regiões Neotropical e Andina foi realizada, a partir de todos os registros geográficos encontrados nas coleções científicas, bem quanto relacionados aos agrupamentos de espécies e regionalizações.

Poster presentation.

NUEVO REGISTRO DE *Lustrochernes grossus* (ARACHNIDA: PSEUDOSCORPIONES) EN ZACAPOAXTLA PUEBLA, MEXICO

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Lustrochernes grossus (Banks, 1893) es una especie de pseudoescorpión de origen neártico. A través de investigaciones realizadas dos años atrás por estudiantes e investigadores del Instituto Tecnológico Superior de Zacapoaxtla se hicieron colectas seriadas en troncos en descomposición en bosque mixto de pino-encino, encontrando 192 ejemplares de pseudoescorpiones de los cuales se hizo la determinación de familia y género respectivamente (Carrión y López, 2020). Posteriormente en enero de 2022 se continuaron las investigaciones para determinar la especie de dichos ejemplares, por lo que se tomaron en cuenta distintas descripciones de autores para su identificación taxonómica, después de una revisión minuciosa y con apoyo del departamento de Acarología del IPN, se analizan y de acuerdo la literatura coincidieron con las características descritas por Hoff, (1947, 1956, 1961) para *Lustrochernes grossus*, siendo los caracteres morfológicos clave para la determinación: longitud del cuerpo, caparazón y quelas. Además, registrando por primera vez esta especie para el estado de Puebla, específicamente en Zacapoaxtla en troncos en descomposición de *Pinus patula*, se observó interactuando con ciempiés geofilomorfos y opiliones. La presencia de esta especie ha sido crucial en el trabajo de investigación de pseudoescorpiones para el estado de Puebla, pues, al determinarla se encontraron diferencias entre las medidas observadas y las ya descritas. Si bien son importantes los caracteres morfológicos, la distribución geográfica y el hábitat, es necesario comparar el ADN mitocondrial para corroborar su identidad.

Poster presentation.

NITROGEN ADDITION CHANGES THE ABUNDANCE OF FOLIAGE SPIDERS IN PATAGONIAN WOODLANDS

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Ecological interactions are regulated by bottom-up cascading effects. In this way, the modification of limiting nutrients in soil could cause changes in the nutritional content of plants, affecting both the abundance of herbivores and their predators, such as spiders. We performed a field experiment to evaluate the interactive effects of nutrient addition (nitrogen, phosphorus, and potassium) in Argentina Patagonian woodlands. For this, we used a dominant tree of the study system (*Nothofagus antarctica*) and measured leaf nutrients, abundance of spiders and potential prey (herbivorous insects) present in the foliage. The most abundant family of spiders found was Anyphaenidae, a group belonging to foliage hunters. Our results showed that the maximum values of spiders abundance were given at intermediate levels of leaf nitrogen while at higher levels of nitrogen the abundance of spiders decreases. We found no effects of phosphorus and potassium addition in this study. In addition, we found a positive relationship between the abundance of potential preys and spiders. We conclude that the quadratic relationship between leaf nitrogen and spider abundance could be mediated by changes in the abundance of foliar herbivores, which could be spider potential preys. Our results suggest that the addition of nitrogen in forest systems can cause "bottom-up" effects in trophic webs through changes in foliar nitrogen content and the abundance of foliar herbivores, that ultimately modify the abundance of forest foliage predators such a spiders.

Poster presentation.

DIVERSITY OF THE GENUS *Pardosa* (ARANEAE, LYCOSIDAE) IN EUROPEAN RUSSIA

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Epigeic wolf spiders of the genus *Pardosa* are the most common lycosids in Middle Europe, inhabiting both natural and urban areas. Totally 60 species have been recorded in European Russia till the moment. Three-fourths are distributed in the Western and Central Palearctic, including Caucasian and Ural endemics (11 and 1 species, respectively). Most of others have a broader range, including four Holarctic species. Interestingly, the number of regional endemics exceeds those of European species sensu stricto (7 species). The diversity is 1.5 times higher in the South than in the North, with a 30% faunal overlap. But throughout all territory, 18% of species occur only. Taxonomically, the genus is divided into 21 groups of 24 present in the Palearctic. The groups of *P. monticola* and *P. pullata* are the most reach in species (15 and 7 respectively). The bulk of endemics and other species of Caucasus are closely related to *P. monticola*, which suggests this region is a possible center of the group diversity. Another issue concerns *P. saltans*, which was regularly misidentified as *P. lugubris* until its description as a new species in 2000 (holotype from Germany). This species was quite common in European Russia (1 ind./trap-day during a population peak in May). According to our data, it lives syntopically with *P. lugubris*, but with different preferences. It chooses light, dry oak forests with abundant litter with the ratio of 4:1 to *P. lugubris* in the preferred habitats.

Poster presentation.

SEASONAL MALE DIMORPHISM DYNAMICS OF *Phalangium opilio* (OPILIONES: PHALANGIIDAE)

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Male dimorphism appears in many characters, such as body length, colors, and arm size. The development of these characters is affected by genetic and environmental factors. *Phalangium opilio* Linnaeus, 1758, which is widely distributed throughout the world, has male dimorphism in chelicera horn length. Chelicera horns are used in male-male competitions as arms. There are two groups in the size of chelicera horns, but the factors related to this length were still unknown. To investigate the factors from seasonal dynamics of male dimorphism, we collected every week from 1:00 pm to 1:30 pm around buildings in a small grassland area in Sapporo, Japan from June to December in 2021. With this period, we covered the whole periods in which adults appeared. After we collected, we measured their prosoma length and chelicera horn length. In this investigation, we found the difference in seasonal dynamics between two types of males. Males with large horns appeared from June to October. However, males with small horns still lived until mid-December. There were low temperatures and a low number of individuals when there were no large horn males, therefore it can be considered that they have a possibility as the factors related to the development of large horns. Furthermore, the low temperature can occur a shortage of food for *P. opilio*. This situation can also hinder the development of large horns because of insufficient food.

Poster presentation.

DOES A LOW RESIDUAL CONCENTRATION OF THE PYRETHROID BIFENTHRIN AFFECT COURTSHIP AND MATING BEHAVIOR IN *Argiope trifasciata*?

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Pesticide residues remaining in the environment can affect the behavior and physiology of beneficial arthropods, with the potential to impact population dynamics and community structure. In 2020, the US EPA allowed New York State the use of bifenthrin on fruit crops to control the invasive brown marmorated stink bug. To evaluate side effects of bifenthrin application, we conducted a series of experiments on the effect of residual concentrations on *Argiope trifasciata*, an orb-weaver common in the Hudson Valley farm lands. Here we report the results of bifenthrin exposure on courtship and mating behavior. We exposed 25 males and 25 females through contact with dried filter paper, which had been soaked with the bifenthrin-containing pesticide Talstar®, diluted to a low concentration of 0.0174 mL/L bifenthrin – half of what had been used previously, or DI water. Males were used on the day of exposure and reused if unresponsive. Females were used 12 to 21 days after exposure, depending on web presence. Bifenthrin had no effect on the behavior of males. However, males were less likely to approach and mate with females which had been exposed to the pesticide and time to approach was negatively correlated with time since female exposure. Courtship duration was positively associated with the probability of mating, but was not affected by male or female treatment. Sample sizes were small and our ability to detect especially interactive effects was probably compromised. Nevertheless, our finding that exposure to very low concentrations of bifenthrin affects reproductive behaviors negatively warrants further research.

Poster presentation.

ON THE INDIVIDUAL ROLE OF FLUORESCENCE AND ULTRAVIOLET REFLECTION ON PREY ATTRACTION BY ORB-WEB SPIDERS

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The visual lure hypothesis predicts that the bright colouration of orb-web spiders is responsible for attracting prey. However, it is challenging to address which components influence prey attraction since the signalling of some spiders involves multiple visual cues. Here we test the hypothesis that ultraviolet wavelengths reflection and fluorescence of the polymorphic orb-web spider *Gasteracantha cancriformis* play individual roles in prey attraction. We combined chemical solutions, digital imaging, spectrophotometry and fluorimetry to create printed spider models. Then we performed field experiments in a rainforest of southeastern Brazil using sticky traps distributed in five treatments: no spider (control for spider presence); spider (control for spectral cues); spider & UV; spider & fluorescence; and spider & UV + fluorescence. We recorded the insects captured by both sides of the traps (dorsum and venter of spiders) at different day periods; then, we used mixed model analyses for prey abundance, prey size, and distance between the interception point and the centre of the trap. Diptera (44.1%) and Hymenoptera (28.8%) represented the most frequent groups of the 1331 arthropods intercepted by traps. In general, the period of the day (afternoon) and spider surface (dorsal) increased prey interception, whereas experimental treatments with UV reflection and/or fluorescence did not show significant effects. However, Diptera was more frequent in dorsal surfaces of treatments with spider and spider & fluorescence; and Hymenoptera in treatments with fluorescence and/or UV reflection. Therefore, deepening knowledge about prey attraction requires further investigation considering visual cues individually under the sensory perception of multiple prey species.

Poster presentation.

HOW MANY JUMPING SPIDER SPECIES ARE THERE IN BRAZIL?

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Salticidae is the most species-rich family of spiders and they probably are most diverse in Brazil, a country of continental proportions and with a wide variety of terrestrial ecosystems and altitudinal gradients. In this study, we gathered information on salticid species described and recorded from Brazil based on the taxonomic literature and spider diversity inventories published between 1757 and 2022. The database includes 1624 distribution records of 590 salticid species from all over Brazil. As reported previously for spiders and other taxa, species distribution records are concentrated near access routes and highly populated areas, especially those with research institutions. In order to estimate the completeness of our current knowledge about jumping spiders in Brazil, we used published records to estimate the total Salticidae species richness in Brazil using the software EstimateS. The Chao1 statistic estimated over 1051 species from the country, which indicates our knowledge on the Brazilian jumping spider fauna is far from complete. Further investigations will elucidate distribution patterns, phylogenetic beta diversity, and propose endemism areas for the taxa in the country and estimate how biased is the sampling effort in the literature.

Poster presentation.

EFFECT OF LEGS REMOVAL ON THE WEB ARCHITECTURE OF *Neoscona theisi*

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The legs autotomy is very frequent phenomenon in spiders to escape from predator quickly. The effect of legs removal in *Neoscona theisi* on architecture of web was studied in laboratory conditions. For the study, spiders were divided into three groups; control group, forelegs removed group, and hind legs removed group. Spiders were captured from agricultural fields and then kept in specially designed wooden boxes covered with PVC sheets. The spiders in the control group had intact legs while in the forelegs removal group, the first two pairs of legs (I & II) were removed, and in the hind legs removed group the last two pairs of legs (III & IV) were removed. Spiders were given two house flies daily as feed to keep them alive. Prey capturing behaviour and how legs loss affects web architecture was noted. The legs of the spiders were removed from femur-trochanter joint. Observations were made every morning and pictures of the webs were taken. The web parameters (number of spirals, mesh height, number of radii, web diameter, radius, capture area, and anchoring thread length) were noted and compared. Results showed that the removal of forelegs had no significant impact on the web architecture of the orb-web spider whilst hind legs removal caused a considerable change in the number of spirals, number of radii, and anchoring thread length. The removal of forelegs somewhat affected prey capture because they intercept the prey for capturing. This study provides baseline data for future detail research.

Poster presentation.

A REVIEW OF HOMEMADE METHODS FOR SCORPION CONTROL

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Accidents with scorpions around the world and in Brazil are responsible for thousands of deaths every year, and pesticides can help minimizing this problem. However, unlike for insects, evidence of the effectiveness of pesticides for scorpions is lacking. At the same time, several websites point out, without citing scientific researches, homemade methods to control scorpions, which generates misinformation among the population. Here, we reviewed 24 homemade methods against scorpions and ways of application of these substances. Among then, lavender, cedar, cinnamon and diatomaceous were the most frequently mentioned online. We identified that the main compounds of 17 of these substances have negative effects against arthropods, especially insects. Because chemoreceptors of scorpions may potentially detect such substances, we will now test them in behavioral experiments.

Poster presentation.

EXPERIMENTAL EVIDENCE THAT THE PESTICIDE BIFENTOL CAN KILL OR BE INEFFECTIVE AGAINST THE YELLOW SCORPION *Tityus serrulatus*

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Accidents with scorpions are a problem in several regions of the world. In Brazil, the responsible for most accidents and deaths is the yellow scorpion *Tityus serrulatus*. Unfortunately, there are few publications testing the effectiveness of most of the products for chemical control of scorpions. Using the pesticide Bifentol, we tested: I – the effect of the pesticide on the mortality of *T. serrulatus*, II – whether the scorpion avoids areas with pesticide and, III – whether it leaves the shelter if pesticide is applied. In the first experiment, we applied pesticide or water on the back and/or substrate according to treatment. For five days we noted whether the scorpion slided (dead) or clung to the substrate (alive) after turning the arena vertically to left and right. After five days, pesticide-treated scorpions were dead and water-treated scorpions were alive. In the second experiment, we placed two shelters, applied pesticide and/or water inside the shelter and a scorpion at the opposite side and measured the time of entry to the shelter. We did not find differences in the time of choice between shelters. In the third experiment, we applied the pesticide and/or water to the shelter where the scorpion was being kept, and, on the following day, we recorded the distance the scorpion was from the shelter. None of the scorpions left the shelters and only one died. Thus, we obtained evidence that Bifentol can kill scorpions, but we did not find a dislodging effect.

Poster presentation.

PROTEIN COMPOSITION OF MINOR AMPULLATE SILK MAKES ITS PROPERTIES DIFFERENT FROM THOSE OF MAJOR AMPULLATE SILK IN ARANEIDAE SPIDERS

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Major ampullate silk (MA-silk) and Minor ampullate silk (MI-silk) of spiders are two different silks produced by morphologically similar ampullate glands. MA-silk is used as the dragline, radial threads, and frames of orb web. MA-silk is known for its toughness, with combined strength and elasticity. MI-silk is used as bridge lines and temporary spiral of orb web, with little supercontraction upon water immersion unlike the MA-silk. To elucidate the structural and compositional differences of MA and MI silks, we firstly established a separate silking protocol of these silks from *Araneus ventricosus*. Characterized mechanical and water-related properties confirmed previous observations, but the larger size of crystallites in MA-silk than MI-silk by WAXS analysis was opposite from the previous work using *Trichonephila clavipes*. We therefore analyzed the proteome compositions of MA and MI silks of *A. ventricosus* and *T. clavata,* while MI-silk of both species were primarily comprised of MiSp, MaSp1, and SpiCE proteins, the fraction of MaSp1 was greater in *T. clavata*, which was close to that in the MA-silk of *A. ventricosus*. The size of crystallite was likely due to the composition of MaSp1 in the silk, and the inclusion of MaSp2 was likely contributing to the supercontraction differences among MA and MI silks. Thus, we created artificial fibers with recombinant mini-spidroins of MaSp1, MaSp2 and MiSp. As expected, MiSp had lowest percentage of contraction when immersed in water, and MaSp2 had the highest contraction. These observations suggest that MaSp2 is the main cause of the water reaction of MA-silk.

Poster presentation.

A TEMPORAL APPROACH TO A SPIDER-WASP INTERACTION IN AN ANTHROPIZED AREA OF SOUTHEASTERN BRAZIL

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The selective pressure exerted by natural enemies is an important biotic factor influencing the phenology of spiders. Although polysphinctine wasps are well known to control spider populations, little is known about how these wasps interact with their hosts in anthropized environments under a temporal approach. Here we address this gap by investigating the phenology of urban populations of the polysphinctine wasp *Hymenoepimecis pinheirensis* (Ichneumonidae) and its host orb-web spider *Leucauge argyra* (Tetragnathidae). We predicted that the incidence of parasitism should increase in periods with the highest abundance of spiders or frequency of large spiders. We performed 12 monthly visual searches for *L. argyra* in an urban park adjacent to the University of Campinas (southeastern Brazil), recording the sex, developmental stage, and incidence of parasitism of each individual. We found 2769 spiders (monthly average = 173±140) during the 1-year period, with a peak in July that coincided with the period of higher abundance of spiderlings and young individuals. We observed 218 spiders parasitized by *H. pinheirensis*, with a monthly average of 14±13 individuals (average parasitism frequency = 7.87±5.31%) and a peak of abundance in August. *Leucauge argyra* presented well-defined winter-mature phenology, characterized by one reproductive period with a peak of adult males during the winter. As expected, the incidence of attacks increased in periods of high abundance of spiders. On the other hand, attack frequencies on small individuals were high, suggesting that the phenological adjustment of this interaction is more prone to be driven by host abundance than by host size.

Poster presentation.

BEHAVIOURAL MANIPULATION OF THE SPIDER *Leucauge argyra* (TETRAGNATHIDAE) INDUCED BY THE DARWIN WASP *Hymenoepimecis pinheirensis* (ICHNEUMONIDAE)

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Polysphinctine wasps are exclusively koinobiont ectoparasitoids of spiders and have the unique ability to manipulate the web construction behaviour of their hosts. Most interactions between polysphinctine wasps and spiders are species-specific. However, recent studies have predicted that these associations are not as narrow as previously thought. Therefore, records on the ecology and biology of new interactions are required to confirm this hypothesis. Herein we report the Darwin wasp *Hymenoepimecis pinheirensis* manipulating the behaviour of the tetragnathid spider *Leucauge argyra* in an urban area located in southeastern Brazil (Campinas, São Paulo). We monitored a population of *L. argyra* in 2021-22 and collected data on the biology of the wasp-spider interaction. Of a total of 2769 spiders that we found, 7.87% (N=218) were parasitized by *H. pinheirensis*, with higher frequencies of attack in young individuals. Eggs are laid anterodorsally on the spider's abdomen and hatches after 2-3 days. The larva of *H. pinheirensis* has three instars and develops on the host over approximately 12 subsequent days. Between the second and third instar, the parasitoid induces the host spider to build a cocoon web with (1) a reduced number of radii (some of them V-shaped), (2) the absence of viscid lines and hub loops, and (3) tri-dimensional structures consisted of lines above and below the hub attached to multiple sites on the substrate. Here we add a second host for *H. pinheirensis* and a second parasitoid for *L. argyra*, which help to elucidate the entangled web of interactions involving polysphinctine wasps and spiders.

Poster presentation.

ON THE NEOTROPICAL SPIDER GENUS *Otoniela* BRESCOVIT, 1997 (ARANEAE: ANYPHAENIDAE, ANYPHAENINAE), WITH THE DESCRIPTION OF SIX NEW SPECIES

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The genus *Otoniela* Brescovit includes two species, the type species *Otoniela adisi* Brescovit distributed in Peru and Brazil and *O. quadrivittata* (Simon) recorded in Venezuela and Argentina. Species of this genus are diagnosed by the following combination of characters: eyes nearly equal in size; tibia I−II with four pairs of robust ventral spines; male palp with patellar apophysis and spermatic duct forming a retrolateral semicircle in the tegulus; female epigyne with basal lateral borders, semicircular, with small atrium; and globular and joined spermathecae. In this work, were examined 127 individuals from many collections, allowing to expand the distribution of *Otoniela adisi*, and to describe six new species: *Otoniela sp.1* (♂♀), from Brazil, Argentina and Paraguay; *O. sp.2* (♂♀), *O. sp.3* (♂♀), and *O. sp.4* (♂♀), all recorded from Brazil and Argentina; and *O. sp.5* (♀) and *O. sp.6* (♂♀)**,** both known only from Brazil. Additionally, new morphological data such as the number and shape of ventral spines in tibiae I and II and the shape of the subtegulum of *Otoniela adisi* are documented. Two species groups, *adisi* group (with five species) and *quadrivittata* group (with three species) are proposed. In addition, the geographic distribution of the genus is extended to several countries in South America.

Auxilio: CNPq

Poster presentation.

DEVELOPMENTAL INSTABILITY OF SPERMATOPHORE PRODUCTION IN SCORPIONS

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In scorpions, sperm transfer is indirect through a sclerotized spermatophore, which is formed by the union of two hemispermatophores generated in the paraxial organs of the male. The production of hemispermatophores is costly, involving an added expense to the production of spermatozoa and ejaculate. This energy expenditure over successive matings can generate developmental instability, which can be measured by assessing the deposited spermatophore's fluctuating asymmetry (FA). More asymmetric spermatophores could be related to failures during sperm transfer due to mechanical uncoupling with females. In this context, we analyzed the FA of spermatophores used in three successive matings in the promiscuous scorpion *Bothriurus bonariensis* (Bothriuridae). In this species, the number of spermatozoa and ejaculate volume show variation across different matings. We expect that the energetic expenditure in the production of spermatophores also generates an increasing FA of spermatophores towards the last mating. A total of 16 males were exposed to different females every ten days, allowing courtship and spermatophore deposition; this was repeated until three spermatophores per male were obtained. In each spermatophore, the FA level of structures important in sperm transfer was measured, and these levels were compared in the three successive spermatophores. We will analyze the results in the context of sexual selection. We will compare our data with previous work to assess whether energy expenditure occurs in different morpho-physiological factors synergistically or antagonistically.

Poster presentation.

EFFECT OF SPECIES COMPOSITION AND STAND AGE ON SPIDER (ARANEAE) AND HARVESTMEN (OPILIONES) COMMUNITIES IN SCOTTISH MANAGED PLANTATIONS

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Plantation systems for commercial timber production can provide refuge for native biodiversity in fragmented and urbanised landscapes. However, species composition and stand age can result in homogenous conditions reducing plant architecture in dense stands, particularly in mature Norway (*Picea abies*) and Sitka spruce (*Picea sitchensis*), thus reducing arthropod diversity. There is a lack of consensus in literature regarding spruce plantation effects on spiders (Araneae) and harvestmen (Opiliones) and determining which environmental variables drive variation in forestry systems. Ground and litter dwelling arachnids were sampled using pitfall traps and litter sieving over five weeks between May-July in Falkland Estate Scots pine (*Pinus sylvestris*) and spruce mixture plantations of different ages, accounting for environmental variables including canopy openness, litter depth, soil pH and Collembola abundance. Results revealed a significantly higher spider richness and diversity in Scots pine and young spruce stands compared to mature spruce, possibly explained by higher vegetation structure and complexity positively impacting assemblages. Regarding harvestmen, although no differences in family-level richness were found between stands, the PCA revealed stronger association with high tree cover and low understory vegetation. Overall, 10 species of high conservation importance were collected, highlighting the need to maintain a habitat mosaic during all forest cycle stages, to ensure habitat specialist conditions are achieved. These findings directly contribute to practical management of spruce plantations to maximise habitat heterogeneity and enhance natural enemy diversity at a local scale, compatible with conservation goals.

Poster presentation.

AVERSIVE CONDITIONING AND MEMORY IN THE HARVESTER *Mischonyx cuspidatus* (ARACHNIDA: OPILIONES)

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Aversive conditioning is a special form of associative learning that includes an unconditioned stimulus (negative) associated with a neutral stimulus. Learning by aversion can be effective in studies of long-term memory. Previous work has shown that different protocols could generate differences in memory consolidation. Typically, long-term memory (LTM) protocols use 30min + intervals between the learning trials while short-term memory (STM) protocols use no/or short intervals. This interval is fundamental for protein synthesis and memory consolidation. We tested these protocols features in the harvester *Mischonyx cuspidatus*. We trained the animals to associate an aversive stimulus (shock) with a chemical (tea). We separated the animals into two groups, one trained in a STM protocol with an interval of 1min between the learning trials and another one in a LTM protocol with a 30min interval. Each animal went through 3 consecutive trials, in which pairings between the chemical and the shock lasted for 3s. We then placed the subjects in a two-choice arena with blank and tea areas, recording them for 10min. We did this test immediately after the last trial and 24h after it. Both protocols were successful for short term-memory formation since animals from both treatments avoided the tea area in the test immediately after the shock. However, neither protocol was successful in long-term memory formation since animals did not avoid the tea area after 24h. In summary, we provide a new method to train aversive conditioning in harvesters, evidence for short-term memory but not for long-term memory in Opiliones.

Poster presentation.

DOES TEMPERATURE AFFECT THE FEEDING BEHAVIOR OF *Mecicobothrium thorelli* (ARANEAE, MECICOBOTHRIIDAE)?

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Mecicobothrium thorelli is a small mygalomorph spider (5-6 mm), endemic to the Ventania and Tandilia mountain systems in Argentina and Sierra de las Ánimas in Uruguay. It lives in funnel and sheet webs that it builds under rocks. In addition, it has a winter life cycle, reproducing and remaining active during the coldest months of the year, an unusual characteristic among spiders. In this work, it was proposed to evaluate feeding behavior traits of this species, such as prey acceptance and attack speed, in three different thermal ranges: cold (5-10°C), medium (15-20°C) and warm (25-30°C). For this, a larva of *Tenebrio molitor* was offered to 20 spiders previously acclimatized to the temperatures corresponding to each thermal range evaluated. The feeding event of each individual was recorded by video for the analysis of the parameters of prey acceptance and attack speed. It was observed that there were no significant differences in prey acceptance between the three thermal ranges evaluated. However, prey attack speeds were significantly higher in the warm thermal range than in the cold thermal range. The attack speeds of the medium thermal range did not present significant differences with the remaining temperatures. These results suggest that, although *M. thorelli* is a winter spider, its feeding efficiency could be optimal at higher temperatures than those to which it is exposed during its period of activity.

Poster presentation.

THE COMPLETE MITOCHONDRIAL GENOME OF *Erigone atra* BLACKWELL, 1833 (ARANEAE, LINYPHIIDAE)

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The mitochondrial genome of *Erigone atra* Blackwell, 1833 has been completely sequenced and annotated for the first time. This species is found primarily in the continental north-temperate zone, and has also been reported from the Galapagos Islands where it is likely an adventive species. From a male collected in the Czech Republic, DNA was extracted using a Qiagen DNEasy Blood and Tissue kit, then sequenced on an Illumina system for 250 bp paired-end reads. Contigs were assembled in SPAdes and the mitogenome extracted from the resulting contigs. The mitogenome was annotated using MITOS and by comparing to other species in the order Araneae. The mitogenome is 14,474 bp, including 22 transfer RNA (tRNA) genes, 13 protein coding genes (PCGs), 2 ribosomal RNA (rRNA) genes, and a control region. This is the first sequenced and annotated mitogenome for this species and for the genus *Erigone* Audouin, 1826.

Poster presentation.

NATURAL HISTORY AND BEHAVIOR OF IMMATURE STAGES OF *Eruga unilabiana* (HYMENOPTERA: ICHNEUMONIDAE) PARASITOID OF *Sphecozone* sp. AND *Eurymorion* sp. (LINYPHIIDAE)

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Wasps of the *Polysphincta* genus-group are currently the only Pimpliinae (Hymenoptera: Ichneumonidae) known that act as koinobiont ectoparasitoids of spiders. Although the known natural history of the group comes from research with a small number of species, a variety of biological adaptations have been documented in these wasps to exploit diverse attributes of host spiders to ensure resources and protection for their immature stages. Here we describe the natural history and behavior of immature stages of *Eruga unilabiana* (Hymenoptera: Ichneumonidae) parasitoid of the spiders *Sphecozone* sp. and *Eurymorion* sp. (Linyphiidae) in the northeast of Brazil. The egg is a white cylindrical mass and positioned across the anterior portion of the spider's abdomen. First-instar larvae hatch from the egg and do not have segmentation in the body. Second instar larvae present segmentation in the body and induce spiders to build a modified web to pupae protection. Third-instar larvae have two pairs of ventral protuberances and eight pairs of retractable dorsal tubercles with tiny hooks. These structures help the larvae to free themselves of the spider's remains and move in the spider's webs. The cocoon is constructed in the center of the modified web sheet and, the silk used to form the cocoon's outer lining is produced in the anal segment. These results indicate that the immature stages of *E. unilabiana* present not only the basic morphological and behavioral characteristics already known for species within the group, but also other new ones adapted to the natural history of the host spiders.

Poster presentation.

HIDDEN IN THE CAVES: NEW TROGLOBITIC SPECIES OF *Spaeleoleptes* AND THE TYPE SPECIES REDESCRIPTION (OPILIONES: LANIATORES: ESCADABIIDAE)

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The genus *Spaeleoleptes* H. Soares, 1966 was proposed to accommodate the first Brazilian troglobite species of harvestman *Spaeleoleptes spaeleus* found in the Lapa Nova do Maquiné cave, Minas Gerais state. With a simple description and loads of convergent characters, little has been studied about this species, and a redescription with modern methodologies was necessary. Since its description, *Spaeleoleptes* has remained monotypic, and after 56 years, a second troglobitic species of this genus, from the Gruta Natal cave, Bahia state, is proposed in this work. Both species share sexually dimorphic legs I with glandular regions and swelling on the tibias and patellas I and II; a penis with robust conductors covering all or part of the internal capsule; and an internal capsule with two lateral projections. But they are separated by a tibia I that is saddle-shaped in *S. spaeleus* but marked by a slight depression in the new species; the apical lamina of the pars distalis of the penis with a medial projection in *S. spaeleus* that is absent in the new species; and lateral projections of the internal capsule that are distally pointed in *S. spaeleus* but distally flattened in the new species. The discovery of new species of *Spaeleoleptes* increases the range of the genus' distribution, now recorded for two Brazilian phytophysiognomies, from the Cerrado of Minas Gerais to the Caatinga of Bahia, suggesting a relictual distribution of its species and pointing to the probable existence of additional *Spaeleoleptes* species to be described for this regions of Brazil.

Poster presentation.

SYSTEMATIC REVIEW OF *Pseudopilanus* (PSEUDOSCORPIONES: CHERNETIDAE)

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Pseudoscorpiones De Geer is the fourth most diverse order of the class Arachnida, currently including 4,054 species distributed in 27 families. They are small arachnids (2-8 mm), that resemble scorpions with no tails and that may or may not have venom glands in the pedipalps. Chernetidae, is one of the most diverse families being represented by more than 726 species in 120 genera, widely distributed throughout the World. One of these genera is *Pseudopilanus* Beier, which currently includes eight species with widespread distributions in the South American countries of Colombia, Ecuador, Brazil, Paraguay, Argentina and Chile. *Pseudopilanus* was proposed to include the type species, *P. fernandezianus* Beier, from Juan Fernández Island, in Chile. Since then, seven species were added the genus. *Rhopalochernes echinatus* (Ellingsen, 1904), from Argentina, and *Rhopalochernes foliosus* (Balzan, 1887), from Argentina and Paraguay were transferred to the genus by Beier while *P. chilensis* Beier and *P. kuscheli* Beier, were described from Chile, *P. topali* Beier, from Argentina, *P. inermis* Beier, from Ecuador, and *P. crassifemoratus* Mahnert, from Brazil. In the present study, the genus is revised. We provide a new and complete diagnosis and characterization of the genus, detailing the presence of a flagellum with three blades; flattened, "leaf-shaped" body bristles and no palpable bristles on tergite XI and tarsus IV. All species are redescribed and diagnosed.

Poster presentation.

POSTEMBRYONIC ONTOGENETIC CHANGE IN PREY SELECTION BY *Chrysso compressa* (THERIDIIDAE) IN A BRAZILIAN RAINFOREST

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Prey availability is one of the parameters affecting the spatial and temporal distribution of spiders in natural environments. In this sense, some spider species are expected to shift their prey selection over postembryonic ontogeny. Here we test this hypothesis using as a model species the cobweb spider *Chrysso compressa*, a subsocial theridiid with extended maternal care, in an Atlantic Forest fragment (Serra do Japi, Jundiaí – SP) located in southeastern Brazil. We predict that spiders will change their selection by prey size and type over their developmental stages. To estimate the prey availability in the environment over the year, we are setting every month sticky traps made of circular plastic plates with entomologic glue near the spider webs on the shrub vegetation. During the monthly expeditions we are also collecting during the monthly expeditions the prey that we found in *C. compressa* webs and recording the developmental stages of spiders. We analysed 231 insects captured by the sticky traps (monthly average ± SD = 116 ± 66 individuals) and 64 prey from spider webs (32 ± 18 individuals) through four months. Our preliminary results indicate that young and juveniles until subadults of *C. compressa* select smaller prey (e.g., small dipterans and hymenopterans) compared to subadults and adults while adult females select larger prey (e.g., hemipterans, lepidopterans, and coleopterans) during the period. This suggests that the shift in prey selection may be linked to the requirement of a significant amount of food provided by adult females to feed their offspring before dispersion, at subadult stage?

Poster presentation.

SPIDER COMMUNITIES OF NATURAL GRASSLANDS CHANGE ACROSS DIFFERENT ECOREGIONS OF URUGUAY

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Grasslands are among the biggest and most bio-diverse ecosystems in the world and are critically endangered by the expansion of agricultural lands and urbanization. In Uruguay, grasslands from different ecoregions are suffering different rates of fragmentation and loss. Therefore, it is important to enhance the basic knowledge of grassland biodiversity. Spiders are a good model for ecological studies, and are good indicators of environmental change. Here, we evaluated if spider communities from natural grasslands are similar in different geographic sites of Uruguay. We worked in six different sites across the country belonging to three different ecoregions: Basaltic Slope (BS), Gondwanic Sediment Basin (GSB), and Crystalline Shield (CS). We sampled spiders with two methods (G-vac and pit-fall traps) seasonally during one year. Overall, we collected 10498 spiders (2189 adults) belonging to 28 families and 99 species. In general, the number of spiders collected in each site was similar, with the exception of CS, where we found the higher abundance, species richness and diversity. In addition, we found significant differences in species composition between CS and the rest of the ecoregions. These results showed that similar natural grasslands in different ecoregions support distinct spider communities. Furthermore, Cristallyne Shield is one of the ecoregion with higher levels of habitat loss which highlight the importance of conserve these ecosystems in diverse geographic locations to preserve the biodiversity of Uruguay.

Poster presentation.

DESCRIPTION OF MYMECOPHYLOUS PSEUDOSCORPION *Sphenochernes bruchi* (MELLO-LEITÃO, 1925)

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Mello-Leitão established in 1925 the chernetid subgenus *Chelifer (Tullgrenia)* for a new species *Ch. (T.) bruchi* using samples collected by the entomologist C. Bruch in nest of the fungus growing ants *Acromyrmex lundi* (Formicidae: Myrmicinae: Attini) in La Plata, 50 km southern Buenos Aires, Argentina. In 1953, Turk established the genus *Sphenochernes* (Chernetidae) with type species *S. schultzi*, using exemplars collected in nest of the same ant in Castelar, 30 km west from Buenos Aires. In 1985, Volker Mahnert pointed out that *Tullgrenia* Mello-Leitão, 1925 is an unavailable name because it is preoccupied by *Tullgrenia* (Hemiptera) van der Groot, 1912; transferred the Mello-Leitão species to the genus *Sphenochernes* based on the diagnosis of the genus and proposed a homonymy between *S. schultzi* and *S. bruchi*, postponing the nomenclatural act because the type material of both species was not available. In this presentation *S. bruchi* is redescribed based on new material collected in nest of *A. lundi* in various localities near Buenos Aires, including the type locality of this species and *S. schultzi* and establish the homonymy of the two species. Description is illustrated with drawings and SEM microphotographs showing diagnostic characters based on the setal morphology.

Poster presentation.

THE DIVERSITY OF THE GENUS *Procaeculus* (ACARI: CAECULIDAE) IN BURMESE AMBER: DESCRIPTION OF TWO NEW SPECIES WITH CONTRIBUIONS TO THE INTERNAL CLASSIFICATION OF THE GENUS

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The rake-legged mite genus *Procaeculus* Jacot, 1936 comprises 9 extant species and its distribution is restricted to North and Central America and the Hawaiian Islands. In the past, it had a much wider distribution, as indicated by four extinct species known from amber deposits across the globe: *P. eridasonae* Coineau & Magowski, 1994 from Baltic amber (Middle Eocene); *P. dominicensis* Coineau & Poinar, 2001 from Dominican amber (mid-Miocene); *Procaeculus* sp. from Chiapas amber (Early Miocene) originating from mines in Simojovel, Mexico; and *P. coineaui* Porta, Proud, Franchi, Porto, Epele & Michalik, 2019, the oldest record of the family, from Burmese amber (Upper Cretaceous). Newly discovered fossil material from Cretaceous amber from Hukawng Valley in Kachin state, northern Myanmar enabled us to identify two new species of the genus and observe new characters of *P. coineaui*. Both new species present a characteristic elongation of the aspidosomal seta *Pa* similar to what Coineau observed in the genus *Allocaeculus.* Additionally, one of the new species presents the *bo* trichobothrial morphology and concave anterior aspidosomal border that are characteristic of all extant species of the genus. Remarkably, this assemblage of three extinct species exhibits more morphological variation than all extant species of *Procaeculus* combined, suggesting that the variation of some morphological characters found today in the genus is only a fraction of what it was in the past.

Poster presentation.

THE NEWEST AND THE OLDEST IN THE SAME JAR: REDESCRIPTION OF *Ceratomontia capensis* AND DESCRIPTION OF A NEW SPECIES OF *Ceratomontia* FOR SOUTH AFRICA (OPILIONES: LANIATORES: TRIAENONYCHIDAE)

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Triaenonychidae Sørensen, 1886, is a family with ~126 species described in South Africa, and distribution in the temperate regions of the global south that formed the supercontinent Gondwana. *Ceratomontia* Roewer 1915, one of the most interesting Triaenonychidae genera with 18 species described for South Africa and four for South America, was formerly considered a transcontinental genus, but recent phylogenetic studies challenge this assumption and point to the non-monophyly of this genus. This work aims to redescribe the type species of *Ceratomontia*, *Ceratomontia capensis* Roewer, 1915, as a starting point for a future taxonomic revision of the genus. Examining the type series of *C. capensis* we found among the paratypes one specimen that belongs to a new species for science. As another result, we also provide a detailed description and illustration of this new species, which has distinct morphological and genital differences from the other species in the genus.

Poster presentation.

TOTAL-EVIDENCE PHYLOGENY AND TAXONOMIC REVISION OF *Tibelloides* MELLO-LEITÃO, 1939 (ARANEAE: PHILODROMIDAE)

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Among the 15 Neotropical genera of Philodromidae, *Tibelloides* Mello-Leitão is probably the most commonly found in collections, currently comprising four described species of grass-dwelling spiders with elongated body and legs (leg II longest). The genus was recently revalidated in a study that did not recover its monophyly based on molecular data. In the present study, we test the monophyly of *Tibelloides*, based on a morphological and on an expanded molecular dataset, and revise the genus. Four gene markers (COI, H3, 16S and 28S) and 151 morphological characters were used. Total-evidence analyses included 47 terminals, of which six were Cheiracanthiidae and Miturgidae to root the tree, and 41 were Philodromidae. The analyses were implemented through Maximum Likelihood, Bayesian Inference and Parsimony. The monophyly of *Tibelloides* was well supported by all analyses, although the internal topology of the genus diverged among them. In all analyses, the genus was placed within Thanatinae as sister-group of *Tibellus*. *Tibelloides* differs from *Tibellus* by absence of median dark stripe on dorsum of both carapace and abdomen, epigynum with anteriorly placed copulatory openings and lack of posterior guide pockets, spermathecae elongated, with mesal lobe, and anteriorly placed glandular heads, male palp with well-developed RTA and VTA, both perpendicular to tibia axis, and lacking ventral bulbar apophysis. Redescriptions of *Tibelloides taquarae* (Keyserling) and *Tibelloides reimoseri* Prado et al. were provided, in addition to descriptions of four new species. The genus distribution is updated, with occurrences from Brazil, French Guiana, Bolivia, Chile, Argentina, Paraguay, Uruguay, and Venezuela.

Poster presentation.

SALINITY AND TEMPERATURE EFFECTS ON BODY SIZE AND PHYSIOLOGY OF A SAND-DWELLING SPIDER, *Allocosa senex* (ARANEAE: LYCOSIDAE)

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Allocosa senex is a wolf spider that inhabits sandy beaches of rivers and the estuarine-oceanic coast of Uruguay living under a wide salinity gradient. Besides, it is susceptible to changes in ambient temperature as all ectotherms. Here we evaluated body size differences and studied the physiological response to temperature and salinity changes on adult females from two beaches with contrasting salinity conditions: Zagarzazú Beach (Uruguay River- Colonia) and Las Grutas Beach (Oceanic-Maldonado). Females were weighted, and cephalothorax and abdomen width were measured after collection. Then, females were assigned to salinity (0‰, 35‰ and 70‰) and temperature (25°C and 32°C) treatments for 15 days. We estimated standard metabolic rate (SMR) and evaporative water loss (TEWL) in an open respirometry system before and after treatments. Moreover, females were weighted before and after treatments. Females from the riparian beach (n=155) were larger in body size ($p<0.001$), abdomen width ($p<0.001$) and weight ($p<0.001$) than females from the ocean beach (n=236). Preliminary results indicated body size differences between both beaches females were held after treatments. Also, we found that prior to treatment, females differed in their SMR ($p<0.001$) and TEWL ($p=0.01$) due to body mass differences, but we did not find a beach significant effect. Therefore, females of *A. senex* with different body size could have different physiological mechanisms to cope with environmental changes, as the ones expected by climate change. Understanding these mechanisms will shed light on how this species will respond to temperature and salinity changes.

Poster presentation.

TELEPORTATION IN HUNTSMAN SPIDERS: COMPARATIVE RUNNING SPEEDS IN 28 SPARASSID SPECIES

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Since running speed affects a spider's ability to subdue prey, escape predation, and move through its habitat providing a measure of whole-organism performance with major consequences for individual fitness. Previous studies of running speed in spiders focus heavily on prograde runners and web-building families. Running speed in the leggy laterigrade huntsman spiders has been studied (Hurst & Rayor 2021, Boehm, et al. 2021) only in two species *Delena cancerides*, *Heteropoda jugulans*. To better understand how speed, morphology, retreat use, and phylogeny intersect in the huntsman spiders, we compared allometry and maximum velocity across 28 huntsman species, plus one outgroup taxa with distinctly different allometry and body proportions (pisaurid). Using Deep Lab Cut Neural Network models, we tracked speed and maximum velocity for a total of 178 spiders as each ran through a plastic tube apparatus. When possible, we compared velocity rates between adult males and females, and adults and subadults within species. Using our recent huntsman phylogeny (see Gorneau, et al 2022), we correlated variables linked with running and allometrics with phylogeny, primarily in subfamilies Deleninae and Heteropodinae. Correlations were examined using the D-test, which compares stochastic character maps of traits along a phylogeny. Huntsman are fast, but some run at speeds resembling 'teleportation'. Our fastest speed demon, *Heteropoda boiei*, ran 116cm/sec (or ~28 body lengths/sec), while most other species ran a maximum of 60 to 80 cm/sec! Our findings give insight into the diversity in behavior, form, and physical performance across this iconic but relatively understudied family of spiders.

Poster presentation.

FOOD PROVISIONING TO *Pardosa* SPIDERS DECREASES LEVELS OF TISSUE-RESIDENT ENDOSYMBIOTIC BACTERIA

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The diversity, host specificity, and physiological effects of endosymbiotic bacteria in spiders are poorly characterized. Here, we used 16S rDNA sequencing to evaluate endosymbionts in two siblings, syntopically occurring wolf spiders: *Pardosa agrestis* and *P. palustris*. Prior to the DNA isolation, we subjected the spiders to five treatment conditions, which consisted of no feeding, or feeding once or twice daily with fruit flies or aphids during seven consecutive days. We recorded the number of killed prey and differences in traveled distance. We retrieved 2801 bacterial OTUs and five archaeal OTUs from *P. agrestis*, and 1190 bacterial OTUs and a single archaeal OTU from *P. palustris*. There were significant differences in diversity between these two assemblages. The increased frequency of feeding with fruit flies, but not aphids, increased the dominance and decreased the alpha diversity of OTUs. The obligate or facultative endosymbionts were present in all analyzed spider individuals and were represented mostly by *Rickettsiella* spp., *Rhabdochlamydia* spp., *Spiroplasma* spp., and the facultative intracellular parasite *Legionella* spp.. However, the vertically transmitted endosymbionts were less common – 5/25 of *P. agrestis* and 1/5 of *P. palustris* were infected with *Wolbachia pipientis*, and 2/25 of *P. agrestis* and 3/5 of *P. palustris* were infected with *Rickettsia* sp. H820. Relative abundance of *Parachlamydia* spp., *Wolbachia* spp. and *Candidatus* Mesochlamydia spp. was negatively correlated with the provisioned food. Concluded, the tissues of *Pardosa* spiders host diverse assemblages of bacteria, including obligate or facultative endosymbionts, with yet unknown phenotypic effects. These assemblages vary according to food quality.

Poster presentation.

Dysdera parthenogenetica SP. NOV. (ARANEAE: DYSDERIDAE), AN UNIQUE CASE OF PARTHENOGENESIS IN SPIDERS

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We studied parthenogenetic clones of the spider *Dysdera hungarica* (Araneae: Dysderidae) and considered them an independent taxon, *Dysdera parthenogenetica* sp. nov. Morphologically, it differs, among others, by slightly reduced copulatory organ. Our data suggest automictic thelytoky in this species. The pattern of distribution of *D. parthenogenetica* sp. nov. suggests that thelytoky in this species originated from a geographic thelytoky. *Dysdera parthenogenetica* sp. nov. colonised areas west of the ancestral sexual species; the distribution areas of *D. parthenogenetica* sp. nov. and *D. hungarica* almost do not overlap. *Dysdera parthenogenetica* sp. nov. was found in a significantly larger variety of habitats than *D. hungarica*, including agroecosystems. Therefore, parthenogenesis is associated with survival in suboptimal conditions. According to molecular markers, *D. parthenogenetica* sp. nov. is monophyletic regarding the ancestral *D. hungarica*. Although *D. parthenogenetica* sp. nov. exhibits minimum genetic variation on the molecular level, it displays a considerable karyotype diversity. Transition to parthenogenesis has been accompanied by a decrease of diploid number by chromosome fusions. Karyotypes of *D. parthenogenetica* sp. nov. diverged from those of *D. hungarica* and are no longer compatible. There is also an interspecific behavioural barrier between these two taxa.

Poster presentation.

A NEW GENUS OF HUNTSMAN SPIDERS FROM THE BRAZILIAN AMAZONIA (ARANEAE: SPARASSIDAE)

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A new genus of Neotropical huntsman spiders is proposed to include four new species, the type species, Gen. A spec. nov. 1 (male, female), from Amazonas, Gen. A spec. nov. 2 (male, female), from Pará, Gen. A spec. nov. 3 (male), from Amazonas and Gen. A spec. nov. 4 (male) from Rondônia, all from the Brazilian Amazonia. It is characterized by the male palp with a simple, distal RTA, slender embolus and elongate median conductor, female epigyne with median septum bearing median triangular pocket and vulva with strongly convoluted ducts. The new genus seems to be more closely related to *Caayguara* Rheims, *Meri* Rheims & Jäger, *Nungara* Pinto & Rheims and *Sadala* Simon with which they share the presence of three promarginal teeth, intermarginal denticles and between 5-10 escort setae on the chelicerae, as well as a short-toothed female palpal claw. It is distinguished from *Caayguara* in having 3-5 escort setae in the chelicerae, a simple, distal RTA in the male palps and a triangular pocket in the median septum of the female epigyne; from *Nungara*, *Sadala* and *Meri* by the presence of only two pairs of ventral spines on tibiae I−II. Nevertheless, without a thorough analysis including representatives of all five genera as well as Neotropical and non-Neotropical representatives of Sparassidae no hypothesis about its placement within the family can be proposed. All species are described and illustrated and a distribution map is provided.

Poster presentation.

MODELS AND REALITY OF THE DISTRIBUTION OF TWO TARANTULAS AFTER TWO DECADES: *Eupalaestrus weijenberghi* AND *Acanthoscurria cordubensis* IN URUGUAY

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Grassland are the dominant landscape in Uruguay. In the last decades intense modifications of these natural environments mainly due to agriculture and forestation were reported. Theraphosid tarantulas are excellent models for biogeographical and ecological studies due to low vagility, high fidelity to their shelters, longevity and other biological characteristics. *Acanthoscurria cordubensis* (previously *A. suina*) and Eupalaestrus *weijenberghi* are two tarantulas which inhabit meadows. They were exhaustively studied in 1998-2000 and 2022 using the same methodology. We sampled 139 sites and registered occasional findings along 6000 Km of routes and roads. With the information of 1998-2000 we model the distribution of both species. For the model we divided the territory of Uruguay in hexagons (apothem 6 Km) considering the presence of the individuals and 58 explanatory variables: spatial, climatic, topographic and land cover. We used the favorability function as modeling algorithm. We tested the presences of 2022 on the previous models. In *E. weijenberghi* the model of 1998-2000 predicted high favorability in the western two thirds of the territory; the main explanatory variables were the spatial component and the absence of natural forest. Only 20% of the presences in 2022 were found in hexagons with F≥0.8. In *A. cordubensis* the model predicted high favorability in a restricted area of the south-west of Uruguay, explained by spatial component and slow drainage of soil. In 2022 only the 55% of the presences were found in hexagons with F≥0.8. Present results alert about the risks for the conservation of both species.

Poster presentation.

AFFIRMATIVE ACTIONS TO PROMOTE AND SUPPORT UNDERREPRESENTED GROUPS IN SCIENTIFIC EVENTS

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Since the workforce is affected by individuals' socio-economic status, prohibitive and ballooning costs associated with academic conferences are one factor that helps to perpetuate inequality in STEM fields. Of the many types of economic barriers that early-career academics and other minority groups can find in the academic realms, those related to scientific events can be tackled and solved by the science community itself. Here we provide ten-point concrete strategies for effecting an affordable, accessible and diversely sustainable and equitable gathering: supporting low-income and parents scientists, improve participation of underrepresented groups, give preference to affordable cities, ensure scientific events are target for students, provide code of conduct and a day rate, provide budget breakdown and diversity report, do not link abstract submission with payment of congress fee, support neurodiversity and people with disabilities.

Poster presentation.

LIBRO ILUSTRADO PARA LA ENSEÑANZA DE ARÁCNIDOS Y NÁHUALT EN NIÑOS DE PREESCOLAR EN LA SIERRA NORTE DE PUEBLA, MÉXICO

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En el estado de Puebla, México, hay 453.162 hablantes de náhuatl; así mismo, existe una diversidad de arácnidos; organismos que en algunos municipios del estado no son conocidos por su distribución, mientras que en otras regiones son temidos por la carencia de información. Con el objetivo de fomentar respeto hacia la clase arachnida y al náhuatl, se creó un libro ilustrado sobre dicha clase utilizando herramientas físicas y digitales; posteriormente se tradujo de español a náhuatl. El libro fue presentado en dos preescolares multigrados del municipio de Zacapoaxtla, acompañado de actividades escolares para que los aprendientes lograran un aprendizaje significativo (Ausubel 1963-1968). Se utilizaron 4 actividades para evaluar a cada alumno, tomando en cuenta rúbricas de evaluación. Los resultados fueron los siguientes, al realizar un concentrado de las actividades, el 77% de estas se encuentran en excelente y bueno, 5% regular y el 12% en deficiente e insuficiente. Los resultados coinciden con Córmack (2004) al mencionar que los niños aprenden por medio de la activa manipulación del ambiente con la intervención del docente, padres de familia y otros niños más adelantados, como mediadores del proceso; pues la manipulación de material y el acercamiento con ejemplares verdaderos, lograron un aprendizaje significativo en ellos, despertaron la curiosidad y fomentaron el respeto hacia la clase Arácnida y el náhuatl. A pesar de que los estudiantes no han desarrollado ciertas habilidades, las actividades realizadas lograron impactar positivamente, pero estas deben tener un seguimiento por parte del docente para seguir fomentando la educación ambiental.

Poster presentation.

NEW SPECIMENS AND COMMENTS ON THE CRATO FORMATION ARANEOFAUNA, LOWER CRETACEOUS OF BRAZIL

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Due to their fragility and lack of mineralization, spiders are rarely preserved in the fossil record, being mostly found in amber and, more rarely, in sedimentary rocks. Until now, Cretaceous fossil spiders deposited in lacustrine environments have been found at eight different locations, with 31 specimens known in the literature. The Crato Formation of Brazil is one of the most important locations in the study of Cretaceous spiders, as it is one of the few deposits in the southern hemisphere to preserve such animals. However, few species of fossil spiders have been described from the Crato Formation so far. Here, we carried out the study of twelve fossil spiders deposited in the collection of the Paleontology Laboratory of the Regional University of Cariri. Six of the specimens were identified as *Cretaraneus martinsnetoi*, an abundant Araneomorphae species in the Crato Formation. Other representatives of this infraorder were identified in a limestone plate containing five spiders preserved next to each other; however, it was not possible to attribute them to lower taxonomic levels due the lack of diagnostic characters. Apart from these, only one specimen was identified as belonging to Mygalomorphae, also with an uncertain taxonomic position, due to the poor preservation. Given the rarity of spiders in lacustrine Cretaceous deposits, the new specimens found in the Crato Formation and our research aimed towards the analysis and morphological description of this group will expand our knowledge of the araneofauna from the Cretaceous of Gondwana.

Poster presentation.

FIRST REGISTER OF *Pseudogaurax tridens* (Diptera: Chloropidae) ASSOCIATED TO EGGS SAC OF *Argiope argentata* (Araneae: Araneidae) IN NORTHEASTERN BRAZIL

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Pseudogaurax Malloch is a genus with worldwide distribution from the family Chloropidae, and are known for the feeding habits of their larvae, generally attacking egg masses and larvae from various groups of arthropods, with higher occurrence reported on eggs sac from spiders. There are 38 species of *Pseudogaurax* within the Neotropical Region, of which 19 are registered in Brazil. However, knowledge regarding the distribution and biology of the genus is scarce, especially in the Northeastern region of Brazil. The species *P. tridens* Sabrosky, 1966 only has a register in the state of Santa Catarina (Southern Brazil). In january 2022, we manually collected an eggs sac of *Argiope argentata* Fabricius, 1775, in the Nazaré Quilombola Community, located in Itapipoca, in the state of Ceará, Brazil. We took the sample to the Laboratory of Ecology and Evolution from UNILAB, where it was kept until the spiders or their predators and/or parasitoids hatched. Posterior to the eclosion, the predators and/or parasitoids specimens were fixed in alcohol 70% and sent to the National Institute of Amazonian Research to be identified. This eggs sac has been fully consumed and from it emerged nine specimens of *P. tridens* along with two parasitoid wasps *Conura* sp. (Hymenoptera: Chalcididae), which secondarily parasitized a non-identified Hymenoptera that also attacks eggs of *A. argentata*. So, we provide the first register of the genus *Pseudogaurax* using eggs sac of the genus *Argiope* as food source to their larvae, expanding the register of *P. tridens* to Northeastern Brazil.

Poster presentation.

UNVEILING THE NEOTROPICAL PHILODROMIDAE: TWO NEW GENERA OF RUNNING CRAB SPIDERS FROM SOUTH AMERICA

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Philodromidae, or running crab spiders, with 523 species in 29 genera, are agile hunters that wander on branches and leaves, not using silk to catch prey. Neotropical representatives have been neglected in systematic works, but recent progress have been made with revisions of *Berlandiella*, *Gephyrellula* and *Cleocnemis*. With the split of *Cleocnemis* in five lineages, two of them were not assigned to existing genera, and are here described as new ones. *Eurynomos* gen. nov. includes only the type species, *Eurynomos lanceolatus* (Mello-Leitão, 1929) comb. nov., which is a senior synonym of *Paracleocnemis apostoli* (Mello-Leitão, 1945) syn. nov. It differs from *Cleocnemis* Simon, 1886 by the embolus relatively long, ventrally curved, originating from small, flattened and slanted base; absence of translucid conductor; and epigynum without lateral plates, with evident transition duct connecting the glandular spermathecae to inner side of anterior end of main spermathecae. *Krokale* gen. nov. includes only *Krokale mutilata* (Mello-Leitão, 1917) comb. nov., which is senior synonym of *Gephyrina imbecilla* Mello-Leitão, 1917 syn. nov., *Cleocnemis serrana* Mello-Leitão, 1929 syn. nov. and *Cleocnemis xenotypa* Mello-Leitão, 1929 syn. nov. Its embolus is relatively long, emerging at prolateral face of tegulum and ending in unique tegular conductor formed by keels and furrow at prolateral distal edge of tegulum; and huge and complex paraconductor with spiny, sinuous distal portion ending in a thin tip. Epigynum very simple, with median septum shaped as subquadrate plate slightly wider than long and copulatory guides shaped as two inverted comma-like strips, directed anterior and outerward.

Poster presentation.

POPULATION ECOLOGY OF *Chrysso compressa* (KEYSERLING, 1884), A THERIDIID SPIDER WITH EXTENDED MATERNAL CARE

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Population studies are essential for understanding how abiotic (e.g., climatic patterns) and biotic (e.g., availability of prey and natural enemies) parameters affect the spider distributions in natural environments over time. However, knowledge about the population ecology of spiders that construct three-dimensional webs is still scarce. Here we address this gap by conducting studies on the natural history and phenology of *Chrysso compressa*, a theridiid spider with extended maternal care, in the Atlantic Forest of southeastern Brazil. We conducted monthly visual searches for *C. compressa* individuals over 18 months in Serra do Japi, Jundiaí (São Paulo). We recorded each individual's sex and developmental stage and correlated our data with abiotic and biotic variables. We found a total of 3365 spiders (monthly average = 177±221), with a peak in March/April that coincides with higher abundances of spiderlings/youngs and with the period when temperature and precipitation values start to decrease. *Chrysso compressa* presented a well-defined stenochronic phenological pattern, characterized by one reproductive period over the year with a peak of adult males in summer. The females maintained maternal care from oviposition to the young spiders, coinciding with the hot-rainy season. During this period, the mother protects the offspring inside a roof-like shape refugee made of leaves. Even with the care, approximately 20% of the egg sacs were attacked by wasps during the reproductive period. This suggests that in addition to abiotic factors, the selective pressure exerted by egg predator wasps is important in modulating the population dynamics of *C. compressa*.

Poster presentation.

TAKING CARE OF THE ENEMY: EGG PREDATION BY THE DARWIN WASP *Tromatobia* (ICHNEUMONIDAE) ON THE COBWEB SPIDER *Chrysso compressa* (THERIDIIDAE)

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Some wasp species use spiders as food resources, overcoming several anti- predator barriers that are exerted by spiders. *Tromatobia* ichneumonid wasps are spider egg predators that usually attack Araneidae species, although there are few records of predation on Clubionidae and Theridiidae spiders. Here, we describe the interaction between *Tromatobia* sp. and *Chrysso compressa*, a subsocial theridiid spider that exhibits extended maternal care, in the Atlantic Forest of southeastern Brazil. We conducted monthly inspections from April 2021 to March 2022, near the Base de Estudos de Ecologia e Educação Ambiental da Serra do Japi, Jundiaí, São Paulo, Brazil (1000 m above sea level; 23º13'53" S, 46º56'09" W), where there is a well-established and easily accessible population of *C. compressa*. We collected 22 egg sacs of C. compressa, of which five (22.7%) were attacked by *Tromatobia* sp., in addition, the predators built cocoons that presented different color and morphology of the egg sacs. Despite these structural modifications, we registered an adult female of *C. compressa* guarding and caring of the two cocoons (attacked egg sac) of the predators as if they were offspring (non-attacked egg sac). To the best of our knowledge, this study represents the first record of *Tromatobia* preying on *Chrysso* eggs.

Poster presentation.

POLIGINANDRIA EN EL OPILIÓN *Pachyloides thorellii* (LANIATORES, GONYLEPTIDAE)

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Los opiliones son arácnidos poliginándricos que presentan características únicas que los hacen modelos muy interesantes para estudiar los distintos mecanismos de selección sexual y evaluar su efecto en su éxito reproductivo. En este estudio nos proponemos determinar si las hembras son igual de poliándricas que los machos poligínicos en el Gonyleptidae *Pachyloides thorellii*. Para esto realizamos cópulas entre adultos vírgenes (N=15). Luego separamos cada miembro de la pareja y lo enfrentamos con un nuevo individuo virgen del sexo opuesto en tres oportunidades consecutivas (utilizando un nuevo individuo virgen por cada encuentro): (a) inmediatamente luego de la cópula; (b) a las 2hs; (c) a las 24hs. Registramos: número de recópulas, duración, tiempo transcurrido entre apareamientos y número de espermatozoides en los receptáculos seminales femeninos. Encontramos que las recópulas son más frecuentes en machos (N=11) que en hembras (N=6) y ocurren más rápidamente en machos que en hembras. Se observaron machos recopulando inmediatamente luego de la primer cópula (N=4), mientras que todas las hembras que recopularon lo hicieron con una latencia mínima de dos horas. No encontramos diferencias al comparar la duración de la primer cópula con la de la primer recópula ni en machos, ni en hembras. Sin embargo, se observa una tendencia de los machos a reducir su tiempo de cópula en sucesivos apareamientos mientras que las hembras lo aumentan. Si bien aun resta analizar el contenido de esperma de las hembras, podemos afirmar que los machos de *P. thorellii* recopulan más frecuentemente y con menor latencia que las hembras.

Poster presentation.

PHYLOGENETIC REVISION OF THE OPILIONES FAMILY NEOPILIONIDAE WITH AN UCE PHYLOGENY

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Neopilionidae is a highly diverse family of temperate Gondwanan Opiliones. Its monophyly has been corroborated by morphological analyses despite the taxon's widespread occurrence of male polymorphism and pronounced morphological variation. However, recent efforts at unraveling the evolutionary history of the group through molecular data have rendered Neopilionidae paraphyletic. Here, we use sequence data from ultra conserved elements (UCEs) to infer the phylogenetic relationships of Neopilionidae, including the relationships of its three subfamilies (Ballarrinae, Enantiobuninae and Neopilioninae). Special attention is given to the intergeneric relationships of the abundant and diverse New Zealand neopilionids, as well as the implications of our findings to the broader understanding of New Zealand biogeographic history.

Poster presentation.

IDENTIFICATION OF SPIDER FAUNA THROUGH ITS GENITALIA IN UNION COUNCIL DOAG DARA, TEHSIL SHERINGAL, DIR UPPER KHYBER PAKHTUNKHWA PAKISTAN

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The current study has been conducted on the Identification of spider fauna through its genitalia in Union council Doag Dara, Tehsil Sheringal, Dir Upper Khyber Pakhtunkhwa Pakistan. For the identification of spider fauna, the study area has been divided into ten different villages viz Daramdala, Doag payeen, Miana Doag, Doag Bala, Malook Khwar, Roghano Kalay, Katair, Pana Ghar, Babozo Bala and Babozo payeen. An extensive field surveys were conducted at each site weekly basis in four time in a month from May to September 2021. In total 269 specimens were collected by using different methods like pitfall, simple net, sweep net, by direct hand picking and preserved in 80%. ethanol. Some specimens were deposited in the laboratory of the department and remaining specimens were dissected in the laboratory and examined under the electric light microscope. The species were identified based on the genitalia. A total 7 different species namely, (*Plexippus paykulli, Pholius plalangirides, Areneus diadematus, Hersilia savignyi, Neoscona domicilorium, Neriene radiate, Heterotopda afghan)* were identified belong to seven families. In the current study the species *Hersilia savignyi* is reported for the first time for Pakistan. The species *Heterotopda afghan* was more abundant 81% specimens followed by *Pholius plalangirides* 48%, *Areneus diadematus* 40%, *Hersilia savignyi* 33%, *Plexippus paykulli* 28%, *Neriene radiate* 26%, *Neoscona domicilorium* 13%. This area is virgin and inhabited by diverse fauna which is remain unexplored. Further detail study is required.

Poster presentation.

AN ARACHNID'S GUIDE TO BEING AN ANT: MORPHOLOGICAL AND BEHAVIORAL MIMICRY IN ANT-MIMICKING SPIDERS

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Batesian mimicry imposes several challenges to mimics and evokes adaptations in multiple sensory modalities. Myrmecomorphy, morphological and behavioral resemblance to ants, is seen in over 2000 arthropod species. The ant-like resemblance is observed in at least 13 spider families despite spiders having a distinct body plan compared to ants. Quantifying the extent to which spiders' shape, size, and behavior resemble model ants will allow us to comprehend the evolutionary pressures that have facilitated myrmecomorphy. *Myrmaplata plataleoides* are thought to resemble weaver ants, *Oecophylla smaragdina.* In this study, we quantify the speed of movement of model, mimic, and non-mimetic jumping spiders. We use traditional and geometric morphometrics to quantify traits such as foreleg size, hindleg size, and body shape between the ant model, mimic, and non-mimics. Our results suggest that while the mimics closely resemble the model ants in the speed of movement, they occupy an intermediate morphological space compared to the model ants and non-mimics. Ant-mimicking spiders are better at mimicking ants' locomotory movement than morphology and overall body shape. Some traits may compensate others, suggesting a differential selection of these mimetic traits. Our study provides a framework to understand the multimodal nature of mimicry and helps discern the relative contributions of such traits that drive mimetic accuracy in ant-mimicking spiders.

Poster presentation.

ASSOCIATIONS OF SPIDERS *Alpaida quadrilorata* (ARANEIDAE) AND *Arachosia proseni* (ANYPHAENIDAE) WITH ROSETTE-SHAPED PLANTS: A GEOGRAPHIC APPROACH

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Spiders are widely distributed in nature and many species establish narrow specific interactions with plants. However, understanding such associations and their geographical distributions is still an unexplored field. To address this gap, here we investigated associations between the spiders *Alpaida quadrilorata* and *Arachosia proseni* with plants in two sites in southeastern (Serra do Cipó, Minas Gerais State) and south Brazil (Eldorado do Sul, Rio Grande do Sul State). We also collected data available on the internet and museums about host plants and the geographical distributions of these spiders. We found that *Alpaida quadrilorata* and *A. proseni* co-occur exclusively sheltered in rosette-shaped plants over their geographical distribution areas. Plants of the genus *Eryngium* of southern South America seem to be the primary host plant in these spider-plant associations. The current population distributions of our study species are disjointed and must have migrated from south to north in the Late Quaternary when the southern grasslands extended towards latitude 20 for at least 750 km. Our data indicate that these spiders reached latitude 19º S in Serra do Cipó and may have extended to latitude 13º S in Serra do Bombado, part of the Espinhaço Mountain Range. Both spider species live frequently associated with *Paepalanthus bromelioides* in a derived and more recent mutualistic association. This spider-plant interaction is based on reciprocal benefits in which spiders gain shelter against predators in mild microclimates with high availability of prey, while plants likely benefit from nutrients from the faeces of spiders and prey remnants.

Poster presentation.

SEXUAL BEHAVIOR IN SUBSOCIAL SPECIES OF *Anelosimus*

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Subsocial spiders have some characteristics avoiding major sociality levels of group living. One of this limitation is the intolerance among adult females that difficulty to cooperation in predatory behavior and communal care behavior. In this context, we found thorough many years of study, some peculiarities about sex behavior. Individuals left the maternal nest when are almost adult and the molts are asynchrony. Some adult females remain in the maternal nest and can remain one adult female per nest, resulting in two scenarios: uni and multi-females nests. Adult males search nest with females of different status of development. Before the migration of the males subadult females feed them by regurgitations only to brothers showing the existence of kin recognition. These super fed subadult males show alometric development of the first pair of legs used in fights between males to access to females. The winner males mate first and the loser remain as a "satellite male". Males do pre and post matting guard. The subadult females are very attractive for males, adopting a similar acceptance posture with adult females. Males show pseudocopulaton behavior, favouring the access to females when reach the adulthood. The strategies to copulate of solitary spiders inhibiting the females aggression are no present for unnecessary in subsocial spiders. The sexual behavior depend on the social context and for this reason, we analyzed mates in nest uni-females and multi-females in species from Brazil and Uruguay.

Poster presentation.

SELEÇÃO DE HABITAT EM ESCALA FINA EM TRÊS ESPÉCIES DE ARANHAS ASSOCIADAS A TRONCOS DE ÁRVORES: UMA APROXIMAÇÃO EXPERIMENTAL

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Sabe-se que a seleção de habitat por aranhas é fortemente influenciada por fatores bióticos e fatores abióticos como a complexidade estrutural do habitat. Esta complexidade estrutural do habitat é um aspecto que afeta intensamente a persistência das espécies, a estabilidade das populações e a coexistência das espécies que interagem entre si. Árvores representam um complexo heterogêneo de micro-habitats devido a sua grande biomassa e a sua complexidade estrutural. Espécies de aranhas que vivem em troncos apresentam diversas adaptações fisiológicas ou morfológicas que vão conferir vantagens neste tipo de ambiente. No entanto, tem sido pouco explorados estudos com este sistema árvore-aranha. Geralmente esses estudos são faunísticos e de distribuição geográfica e a seleção de habitat bem como seu efeito na composição e coexistência das espécies, tem sido pouco explorado. No presente estudo examinamos experimentalmente a preferência por um micro-habitat específico em três espécies de aranhas não tecedoras associadas aos troncos de árvores: (1) *Selenops cocheleti* (Selenopidae); (2) *Corinna rubripes* (Corinnidae) e (3) *Loxosceles gaucho* (Sicariidae). A especialização por micro-habitat parece estar restrita às características arquiteturais dos troncos e não à taxonomia da planta. *Selenops cocheleti* e *Corinna rubripes*, ambas consideradas aranhas arborícolas, apresentaram uma significativa preferência por cascas soltas e orifícios nos troncos respectivamente. *Loxosceles gaucho* aparentemente escolhe concavidades e orifícios perto da base do tronco sem dar muita importância às características físicas do micro-habitat per se (e.g. profundidade, altura, comprimento). Nossos resultados evidenciam que *S. cocheleti* e *C. rubripes* podem avaliar em fina escala a estrutura física do micro-habitat.

Poster presentation.

REVISÃO SISTEMÁTICA E ANÁLISE FILOGENÉTICA DE *Linothele* KARSCH, 1879, COM ÊNFASE NAS ESPÉCIES DO BRASIL (ARANEAE, MYGALOMORPHAE, DIPLURIDAE)

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Diplurinae (Mygalomorphae: Dipluridae) atualmente inclui 51 espécies nos gêneros *Diplura* C. L. Koch, 1850, *Harmonicon* F. O. Pickard-Cambridge, 1896, *Linothele* Karsch, 1879 e *Trechona* C. L. Koch, 1850. *Linothele*, caracterizada pela ausência de lira, abarca 22 espécies da região andina (Equador 8, Colômbia 3, Peru 5), Venezuela (2), Bahamas (1) e Brasil (3). A única revisão de *Linothele* (por Drolshagen & Bäckstam, 2021) apresenta taxonomia controversa, mantendo todas as espécies de *Linothele* em um único gênero e afirmando que as espécies brasileiras precisam ser revisitadas, pois são conhecidas somente da literatura. Essa concepção contrasta com a análise filogenética e as propostas taxonômicas de nosso grupo de trabalho, esboçadas na tese de Pedroso (2015), que indica a inclusão de três grupos diferentes de espécies no gênero. Este trabalho propõe descrever e propor formalmente os distintos gêneros incluídos no conceito atual artificial de *Linothele* (ausência da lira primitiva em Diplurinae), a saber *Neodiplura* F. O. Pickard-Cambridge, 1896 (Brasil, Bolívia e novo registro para Argentina), que deve ser retirado da sinonímia com *Linothele*, e um gênero inédito que inclui somente espécies brasileiras. Ademais, serão feitas a revisão e a redescrição das espécies válidas e inéditas de *Linothele* "sensu stricto" (restrita aos Andes, Venezuela, Bahamas e novo registro para Panamá), *Neodiplura* e gênero inédito. No Brasil, serão revalidadas Gen. nov. *borgmeyeri* (Mello-Leitão, 1924) comb. nov. e Gen. nov. *gymnognatha* (Bertkau, 1880) comb. nov. e transferidas para o gênero Gen. nov. *cristata* (Mello-Leitão, 1945) comb. nov. e Gen. nov. *paulistana* (Mello-Leitão, 1924) comb. nov.

Poster presentation.

STAYING ALIVE: HOW HARVESTMEN AVOID PREDATION

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Harvestmen are the third largest order of arachnids and also an interesting group to study prey-predator interactions: they possess great morphological variation, and have diverse defenses against predators, which have great diversity as well. In this work, we reviewed the various forms of defense used by harvestmen and their relationship with different predators, focusing on studies after 2007. We addressed the diversity of chemical defenses already identified in the four suborders of harvestmen, against which predators the effectiveness of these defenses was tested, and the costs involved in the use of these defenses. Unlike many harvestmen, which appear camouflaged to human eyes, some species stand out for having spots that contrast with the coloration of the rest of the body. We discuss some hypotheses for the different types of patterns observed. In addition, we briefly addressed the use of autotomy to escape predators, gregarious behavior, thanatosis, bobbing (repetitive dorso-ventral body movement), body vibration and, sound production. We highlight in which suborders of harvestmen given types of defenses occur and in which contexts they have been observed. The wide variety of defenses in this group of arachnids makes it possible to discuss how the interaction between prey and predators can lead to the evolution of defenses in different ways.

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